Vol. 1017 Number 3

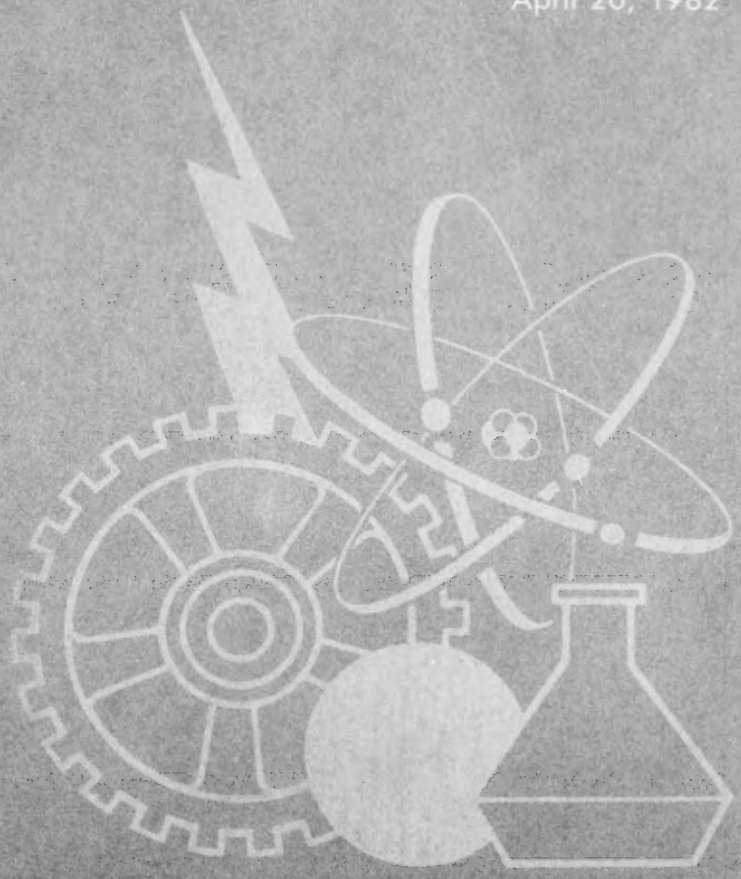
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 20, 1982



U.S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 20, 1982 Volume 1017 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,523,610, Re. S.N. 302,739, Filed Sept. 16, 1981, Cl. 209/155, PARTICLE SEPARATOR, Edward M. Purcell, Owner of Record: *Inventor,* Attorney or Agent: Robert F. O'Connell, et al., Ex. Gp.: 177

3,769,032, Re. S.N. 337,226, Filed Jan. 6, 1982, Cl. 426/594, AROMA-ENRICHED COFFEE PRODUCTS AND PROCESS, Timothy A. Lubsen, et al., Owner of Record: *The Procter and Gamble Co., Cincinnati, Ohio,* Attorney or Agent: Rose Ann Dabek, et al., Ex. Gp.: 172

3,851,526, Re. S.N. 346,422, Filed Feb. 5, 1982, Cl. 73/202, FLUID FLOWMETER, Charles F. Drexel, Owner of Record: *Tylan Corp., Torrance, Calif.,* Attorney or Agent: Robert Berliner, et al., Ex. Gp.: 244

3,970,934, Re. S.N. 318,630, Filed Nov. 5, 1981, Cl. 324/158P, PROBE HEAD FOR TESTING PRINTED CIRCUIT BOARDS, Akin Aksu, Owner of Record: *Inventor,* Attorney or Agent: Franklin D. Ubell, Ex. Gp.: 252

4,171,561, Re. S.N. 313,273, Filed Oct. 21, 1981, Cl. 277/1, MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING SAME, Dean R. Bainard, et al., Owner of Record: *Garlock, Inc., Rochester, N.Y.,* Attorney or Agent: Thomas R. Boston, et al., Ex. Gp.: 241

4,184,914, Re. S.N. 347,755, Filed Feb. 10, 1982, Cl. 162/135, FOAM COATING OF PAPER EMPLOYING A HYDROLYZED PROTEIN FOAMING AGENT, Byron Jenkins, Owner of Record: *Star Paper Ltd., Feniscowles, Blackburn, Lancashire, England,* Attorney or Agent: Lawrence Rosen, Ex. Gp.: 173

4,187,148, Re. S.N. 345,690, Filed Feb. 4, 1982, Cl. 48/197R, PROCEDURE FOR SEPARATING AND RECOVERING MARSH GAS, Veli E. Reijonen, Owner of Record: *Vyr-Metoder AB, Taby, Sweden,* Attorney or Agent: Richard S. Faust, Ex. Gp.: 173

4,187,721, Re. S.N. 348,071, Filed Feb. 11, 1982, Cl. 73/861.32, METHOD AND STRUCTURE FOR FLOW MEASUREMENT, James E. Smith, Owner of Record: *Robert Harvey French, Samuel K. Johnson, James E. Smith, David H. Stainton, Boulder, Colo., Kurt O. Plache, Indian Head Park, Ill.,* Attorney or Agent: Mary Helen Sears, et al., Ex. Gp.: 244

4,214,485, Re. S.N. 345,755, Filed Feb. 4, 1982, Cl. 73/655, ELECTRO-MECHANICAL TRANSDUCER, Paul J. Berger, et al., Owner of Record: *Paul J. Berger, Kalispell, Mont.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 244

4,234,417, Re. S.N. 338,279, Filed Jan. 11, 1982, Cl. 209/306, FIBROUS STOCK SCREEN, W. Thomas Gauld, et al., Owner of Record: *Inventors,* Attorney or Agent: John Walker, et al., Ex. Gp.: 177

4,239,243, Re. S.N. 345,735, Filed Feb. 4, 1982, Cl. 277/153, MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING SAME, Dean R. Bainard, et al., Owner of Record: *Garlock, Inc., Longview, Tex.,* Attorney or Agent: Thomas R. Boston, Ex. Gp.: 241

4,249,896, Re. S.N. 317,698, Filed Nov. 2, 1981, Cl. 433/126, COMPLIANTLY MOUNTABLE TURBINE CARTRIDGE ASSEMBLY FOR GAS-DRIVEN DENTAL HANDPIECE, Frank W. Kerfoot, Jr., Owner of Record: *Syntex (U.S.A.), Inc., Palo Alto, Calif.,* Attorney or Agent: John A. Dhuey, et al., Ex. Gp.: 333

4,262,222, Re. S.N. 337,217, Filed Jan. 6, 1982, Cl. 307/608, INTERRUPTABLE SIGNAL GENERATOR, Merlin D. Bjorke, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.,* Attorney or Agent: John R. Sumner, et al., Ex. Gp.: 254

4,270,422, Re. S.N. 337,266, Filed Jan. 5, 1982, Cl. 82/36, CUTTING TOOL, Ken G. E. Andersson, Owner of Record: *Sandvik Aktiebolag, Sandviken, Sweden,* Attorney or Agent: Ronald Grudziecki, et al., Ex. Gp.: 324

4,275,343, Re. S.N. 337,139, Filed Jan. 5, 1982, Cl. 318/721, BACK EMF CONTROLLED PERMANENT MAGNET MOTOR, Donald E. Fulton, et al., Owner of Record: *Inventors,* Attorney or Agent: Joseph Weingarten, et al., Ex. Gp.: 217

4,284,322, Re. S.N. 325,474, Filed Nov. 27, 1981, Cl. 339/223.002, IGNITION CABLE TERMINAL CONSTRUCTION, James M. Keller, Owner of Record: *Eltra Corp., Toledo, Ohio,* Attorney or Agent: L. J. Flury, Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,473,430, Reexam. No. 90/000,176, Requested: Mar. 22, 1982, Cl. 411/472, SEALING CLAMP, Herbert Niedecker, Owner of Record: *Inventor,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 355, Requester: S. Blondheim & Co., Inc., Oakland, Calif.

PATENT NOTICES

Certificates of Correction for the Week of April 20, 1982,

4,179,157	4,280,668	4,300,401	4,310,100
4,195,323	4,282,001	4,300,541	4,310,897
4,228,496	4,282,457	4,301,329	4,310,960
4,244,291	4,287,036	4,301,873	4,310,963
4,245,076	4,287,862	4,302,362	4,311,121
4,252,232	4,288,335	4,302,445	4,311,135
4,256,646	4,288,356	4,302,971	4,311,586
4,260,634	4,288,395	4,303,303	4,311,780
4,264,695	4,290,744	4,303,935	4,311,849
4,265,310	4,290,794	4,304,431	4,312,277
4,265,588	4,292,280	4,304,439	4,312,450
4,267,596	4,293,431	4,304,601	4,312,570
4,268,452	4,293,915	4,305,265	4,312,611
4,269,741	4,294,411	4,305,992	4,312,770
4,270,283	4,295,587	4,306,673	4,312,974
4,271,134	4,296,159	4,306,984	4,313,043
4,271,289	4,296,241	4,306,993	4,313,083
4,271,713	4,296,280	4,307,045	4,313,162
4,272,926	4,296,337	4,307,099	4,313,442
4,273,035	4,296,780	4,307,327	4,313,917
4,273,065	4,297,909	4,307,670	4,313,959
4,273,159	4,298,498	4,307,818	4,314,417
4,273,685	4,298,638	4,308,371	4,314,517
4,275,071	4,298,936	4,308,668	4,314,967
4,275,118	4,299,255	4,308,906	4,315,170
4,275,277	4,299,604	4,309,486	4,315,222
4,276,228	4,299,831	4,309,715	4,315,788
4,276,779	4,299,872	4,309,717	4,316,069
4,278,781	4,299,900	4,309,786	4,317,076
4,279,792	4,299,985	4,309,922	4,317,184

Disclaimers

3,546,355.—*Fred B. Maynard,* Phoenix, Ariz. AUTOMATIC TONE GENERATING SYSTEM FOR AN ELECTRONIC ORGAN. Patent dated Dec. 8, 1970. Disclaimer filed Feb. 2, 1981, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

4,059,215.—*Alfred B. Owen* and *Bruce M. Gifford,* Houston, Tex. CIRCULAR DOUBLE-JACKETED GASKET WITH SINGLE JOINT. Patent dated Nov. 22, 1977. Disclaimer filed Mar. 15, 1982, by the assignee, *Lamons Metal Gasket Co.*

Hereby enters this disclaimer to claims 21 and 22 of said patent.

4,097,594.—*Clinton Joseph Peake* and *Wayne Nelson Harnish,* Medina, and *Bruce Lloyd Davidson,* Middleport, N.Y. MONO-5-SUBSTITUTED-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS. Patent dated June 27, 1978. Disclaimer filed Jan. 27, 1982, by the assignee, *FMC Corp.*

Hereby enters this disclaimer to claim 5 of said patent.

4,100,281.—*Clinton Joseph Peake* and *Wayne Nelson Harnish,* Medina, and *Bruce Lloyd Davidson,* Middleport, N.Y. MONO-5-SUBSTITUTED-THIO-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS. Patent dated July 11, 1978. Disclaimer filed Jan. 13, 1982, by the assignee, *FMC Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 6, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-02-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-08-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-09-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-17-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-26-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	5-05-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-30-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-14-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-06-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	12-11-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-02-80

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,171,131 to 3,176,313, inclusive

Plant Patents ..... Numbers 2,486 to 2,489 inclusive

REISSUES

APRIL 20, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,905
MULTI-SECTION TELESCOPIC BOOM

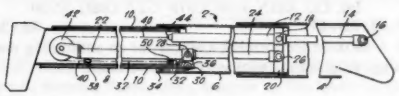
Robert J. Lester, Sunderland, and Raymond Murta, West Boldon, both of England, assignors to Coles Crane Ltd., Sunderland, England

Original No. 4,156,331, dated May 29, 1979, Ser. No. 850,129, Nov. 10, 1977. Application for reissue Jun. 23, 1980, Ser. No. 161,791

Claims priority, application United Kingdom, Nov. 11, 1976, 47015/76

Int. Cl.³ E04H *12/34*

U.S. Cl. 52—115 **9 Claims**



1. A multi-section telescopic boom comprising: a base section; first and second inner sections telescopically received within the base section; a third outermost section telescopically received within the [third] *second* section; a first ram having a first end connected to the base section and a second end connected to the first section for telescopically moving the first section relative to the base section; a second ram connected to the first section and to the second section for telescopically moving the second section relative to the first section; elongate, tension applying means having [first and second] *its* ends connected with the first section [and the second section], the tension applying means including an intermediate portion of a sufficient length so as to extend at least partially over the length of the third section; pulley means connected with the second section[, located within the longitudinal extent of the third section] and engaging [the intermediate portion of] the tension applying means so as to maintain the tension applying means taut; and coupling means connected with the tension applying means and the third section for releasably securing to the third section a part of the tension applying means; whereby extension *or retraction* of the second ram with the coupling means released causes no extension *or retraction* of the third section relative to the second section, and extension *or retraction* of the second ram with the coupling means engaged causes an extension *or retraction* of the third section relative to the second section.

Re. 30,906
ENVELOPE GENERATOR

Teruo Hiyoshi; Akira Nakada, both of Hamamatsu; Tsutomu Suzuki, Shizuoka; Eiichiro Aoki, Hamamatsu, and Eiichi Yamaga, Tokyo, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,178,826, dated Dec. 18, 1979, Ser. No. 839,912, Oct. 6, 1977. Application for reissue May 30, 1980, Ser. No. 154,992

Claims priority, application Japan, Oct. 8, 1976, 51-120936

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **16 Claims**

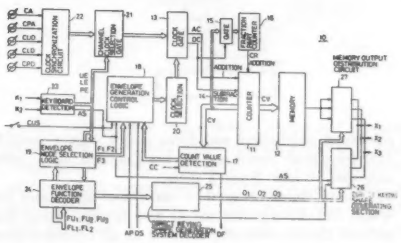
10. An envelope generator used in a keyboard electronic musical instrument for selectively generating an envelope waveshape signal which is used to impart a characteristic varying with time to a musical tone produced by said instrument, comprising:

switch responsive means for producing a binary coded envelope selection signal indicative of a selected one of plural envelope waveshapes available for production by said envelope generator,

envelope mode selection logic for providing one subset of a set of envelope mode selecting signals in response to said binary coded envelope selection signal,

register means for storing envelope waveshape data corresponding to the current value of said envelope waveshape signal which establishes said time varying characteristic of the musical tone,

arithmetic means, receiving waveshape variation data, for arithmetically combining the waveshape variation data with at least a pair of said envelope waveshape data stored in said register means, the resultant new envelope waveshape data being stored in said register means in place of the data previ-



ously stored therein, said arithmetic means performing designatable arithmetic operations,

control logic means for programmatically controlling operations of said arithmetic means and producing said waveshape variation data in response to the depression and release of a keyboard key and to the provided subset of envelope mode selecting signals, said provided subset of envelope mode selecting signals at least designating the certain arithmetic operations of said arithmetic means required to obtain said selected one envelope waveshape, and

feedback means for feeding back at least a part of the stored envelope waveshape data of said register means to said control logic means so that the production of said waveshape variation data is modified thereby.

Re. 30,907
COOLING DEVICE FOR SEWING MACHINES

Hermann Gauch, Moglingen, and Dieter Schopf, Gerlingen, both of Fed. Rep. of Germany, assignors to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Original No. 4,062,310, dated Dec. 13, 1977, Ser. No. 709,476, Jul. 28, 1976. Application for reissue Nov. 15, 1979, Ser. No. 94,517

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1975, 2534568; Jun. 6, 1976, 2627015

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—280 **8 Claims**

1. A cooling device for sewing machines having stitch forming instrumentalities defining a stitch forming area and a frame having a machine chamber means, said cooling device comprising:

a main drive shaft means mounted in said frame longitudinally thereof;

a drive pulley means mounted on said drive shaft means, including fan means formed as an integral part thereof;

handwheel means [surrounding said fan means and] fixedly secured [thereto] *to said fan means*, said handwheel means having [an] *a tubular* inlet [port] *passage opening*

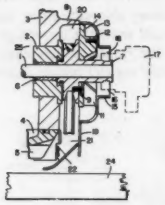
to said fan means and centrally arranged so that air drawn through said inlet passage by said fan means is directed toward and propelled radially outwardly from the central area of said fan means;

shroud means secured to said frame [,] and associating with said frame and said handwheel means whereby forming an air chamber means; and

means for directing air discharged from said air chamber means along the bottom of said machine.

7. A cooling device for sewing machines having a frame including a machine chamber means, said cooling device comprising:

a drive shaft means mounted in bearing means on said frame longitudinally thereof;



a combined handwheel and drive pulley means carried by said drive shaft means and having [at least one] *centrally arranged air* inlet [port] means;

a belt guard means secured to said frame about said handwheel and drive pulley means and having shroud means secured thereto whereby forming an air chamber means;

a fan means formed as an integral part of said handwheel and drive pulley means, said fan means being disposed in said air chamber means; and

said shroud means includes baffle means for directing air discharged from said air chamber means along the bottom of said machine.

Re. 30,908

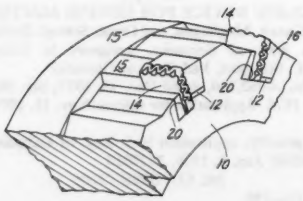
CUTTING INSERT

Ernest J. Friedline, and Donald W. Warren, both of Latrobe, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Original No. 2,201,979, Ser. No. 852,711, Nov. 18, 1977. Application for reissue Feb. 4, 1981, Ser. No. 231,426

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **9 Claims**



1. A cutting insert comprising: a body of hard wear resistant material having spaced substantially parallel faces that are polygonal when viewed in plan; a peripheral wall extending between said faces; cutting edge means comprising at least two cutting edges; *each cutting edge* formed at the juncture of said peripheral wall and [at least] one of said faces, said peripheral wall having recesses formed therein interrupting said cutting edge means; said recesses interrupting one cutting edge of said insert being staggered relative to the recesses interrupting the other cutting edge of the insert when said cutting edges are viewed in superposed relation; the depth of said recesses in said peripheral wall decreasing as the recess extends away from said cutting edge means; and said two cutting edges formed one on each face along the same side of said insert.

Re. 30,909

SILOXANE-TIN COATINGS AND THEIR USE FOR PROTECTING MATERIALS FROM GROWTH OF PESTIFEROUS ORGANISMS

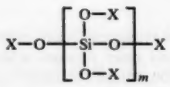
Gabriel H. Law, Whittier, and Albert P. Gysegem, Monrovia, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Original No. 4,080,190, dated Mar. 21, 1978, Ser. No. 718,149, Aug. 26, 1976. Application for reissue Feb. 15, 1980, Ser. No. 121,725

Int. Cl.³ A01N *9/00*; C07F *7/22*; C08G *77/04*

U.S. Cl. 71—67 **50 Claims**

6. A siloxane for forming a binder for an antifouling marine coating, wherein the siloxane has the formula:



where m is from about 1 to about 10,

where each X is independently selected from the group consisting of alkyl and alkoxyalkyl radicals containing less than 6 carbon atoms and Y,

where Y has the formula:

where R_1, R_2, and R_3 are independently selected from the group consisting of alkyl and cycloalkyl radicals, where R_1, R_2 and R_3 contain in combination up to 18 carbon atoms, and

where the X's are selected so the ratio of tin atoms to silicon atoms in the siloxane is from about 1:50 to about 2:5.

Re. 30,910

REDUCING CHOLESTEROL LEVELS

Alan H. Weigand, Fort Lee, N.J., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

Original No. 3,859,437, dated Jan. 7, 1975, Ser. No. 346,751, Apr. 2, 1973. Continuation of Ser. No. 867,322, Jan. 5, 1978, which is a continuation-in-part of Ser. No. 259,062, Jun. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,296, Mar. 19, 1971, abandoned. Application for reissue Jan. 31, 1980, Ser. No. 117,239

Int. Cl.³ A01N *45/00*

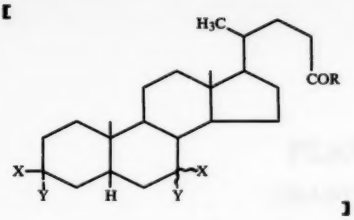
U.S. Cl. 424—238 **8 Claims**

[1. The method of reducing lipid levels of human beings, which comprises;

a. orally administering over an extended period of time, to a human being in a hyperlipidemic state;

b. a small but effective amount sufficient to effect a reduction of the lipid levels of said human being, of a compound of the formula:]

[



]

[wherein
R is OH, $NHCH_2COOH$, or $NHCH_2CH_2SO_3H$;
each X is hydrogen;
each Y is hydroxy, or acyloxy; and X and Y when taken together is oxo (O=);
and the non-toxic, pharmaceutically acceptable salts thereof.]

Re. 30,911

OPTICAL SCANNING AND ENCODING DEVICE

James E. Burnett, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Original No. 4,151,555, dated Apr. 24, 1979, Ser. No. 854,803, Nov. 25, 1977. Application for reissue Dec. 20, 1979, Ser. No. 106,073

Int. Cl.[3] **H04N** *1/46, 9/02*

U.S. Cl. 358—75 **13 Claims**

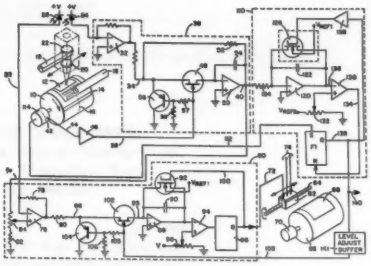
12. An optical scanning and encoding device for providing a print signal pulse train to an ink jet printer in which a master image, including a reference image area, is scanned along a scan line and said print signal pulse train is generated at a frequency proportional to the density of said master image, comprising:

optical scanner means for scanning the master image along a scan line and for providing an image density signal related to the density of the master image along the scan line,

reference level means for receiving light from said reference image area and for providing a reference level signal,

level shifter means, responsive to said image density signal and to said reference level signal, for providing an adjusted image density signal, and

integrator means, responsive to said adjusted image density signal and to said reference level signal, for repetitively inte-



grating said adjusted image density signal and providing a pulse in said print signal pulse train each time said adjusted image density signal is integrated to a predetermined level, said integrator means further including means, responsive to said reference level signal for adjusting the time required for said integrator to integrate to said predetermined level, whereby the frequency of said print signal pulse train is adjusted to compensate for fluctuations in light reflected from said reference image area.

PLANT PATENTS

GRANTED APRIL 20, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,839

SPUR-TYPE RED DELICIOUS APPLE TREE

William G. Evans, and Don R. Snipes, both of Yakima, Wash., assignors to Van Well Nursery, Inc., Wenatchee, Wash.

Filed May 9, 1980, Ser. No. 148,249

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of spur-type Red Delicious tree, substantially as described and illustrated, with the productivity and growth characteristics of its parent Oregon Spur and with fruit and stem coloring with blush red formation nearest resembling the color of Early Red One, U.S. Plant Pat. No. 3,556, but approximately 15 days ahead of the initiation of coloration and ahead of the attainment of full coloration of Early Red One.

4,840

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 22, 1980, Ser. No. 189,171

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by brilliant red, high centered blooms borne primarily singly to a stem on an upright, vigorous plant.

PATENTS

GRANTED APR. 20, 1982

ERRATA

For CLASS	See PATENT NO.
524–083	4,325,851
523–334	4,325,852
524–458	4,325,856
523–412	4,325,857
524–524	4,325,858
524–096	4,325,859
524–155	4,325,860
524–087	4,325,862
524–111	4,325,863
524–104	4,325,864
523–205	4,325,865
373–101	4,326,093
372–061	4,326,178
364–900	4,326,207

PATENTS

GRANTED APR. 26, 1983

[CLASS 4]

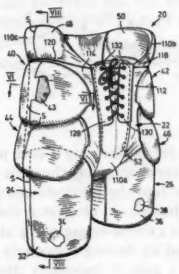
Pat. No.	Class
4,378,001	4
4,378,002	4
4,378,003	4
4,378,004	4
4,378,005	4
4,378,006	4
4,378,007	4
4,378,008	4
4,378,009	4
4,378,010	4
4,378,011	4
4,378,012	4

PATENTS

GRANTED APRIL 20, 1982

GENERAL AND MECHANICAL

4,325,148
UNIFORMS FOR ICE HOCKEY PLAYERS
John Livernois, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada
Filed May 30, 1980, Ser. No. 155,045
Claims priority, application Canada, Apr. 23, 1980, 350445
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—2 **10 Claims**



1. An inner protective garment for an ice hockey player, comprising a one-piece shell including a body portion of generally tubular shape dimensioned to fit closely around the lower part of a wearer's torso including the hips, and a pair of tubular leg portions extending outwardly from the body portion over a distance sufficient to at least substantially completely enclose the wearer's thighs, said shell being provided with a plurality of pockets capable of receiving protective pads and including at least one pocket in a rear central area of said body portion intended to receive a tail-bone protector pad and at least one pocket in each of the leg portions of the shell, said leg pockets extending over substantially the entire length of and encircling substantially the entire circumference of the leg portions including at least the sides of said portions, the garment further including at least one flap-like pouch secured to each side of said shell, said pouches being shaped and arranged to cover the hips of a wearer and forming pockets for receiving protective hip pads and each said pouch including a lower portion which is free of attachment to the shell so as to permit relative movement of the underlying parts of said shell and allow a wearer reasonable freedom of bending movement at the hips.

4,325,149
AIR SUPPLY SYSTEM FOR SPAS
Gerald W. Moreland, Garden Grove, Calif., assignor to Hydro Air Industries, Inc., Orange, Calif.
Filed Jun. 5, 1980, Ser. No. 156,668
Int. Cl.[3] A61H *9/00*; E04H *3/20*; A47K *3/10*; F04D *29/40*
U.S. Cl. 4—488 **13 Claims**

1. Apparatus for supplying air, under pressure, to aerate water in a spa, comprising:

a housing, comprising:

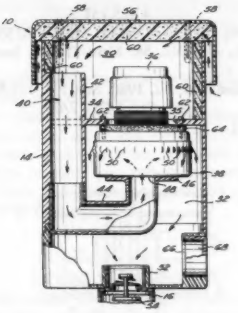
an air pressure chamber;

a motor chamber; and

a moistureproof partition separating said motor chamber from said air pressure chamber to prohibit moisture from passing directly from said air pressure chamber to said motor chamber;

a blower mounted in said air pressure chamber, said blower comprising a fan enclosed within a blower housing, said blower housing communicating with said air pressure chamber only through flow constricting orifices to supply air under pressure thereto, the inlet of said blower located in said air pressure chamber;

an air inlet duct, connected to supply air to said blower inlet from a location outside of said housing, said air inlet duct communicating with said air pressure chamber solely through said blower inlet and said blower, and sealed from said air pressure chamber to prevent water in said air pressure chamber from entering said air inlet duct without passing through said blower housing



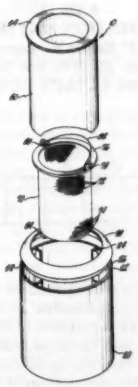
an air outlet duct, connecting said air pressure chamber to said spa;

a motor mounted in said motor chamber;

means for connecting said motor to drive said blower, said connecting means passing through an aperture in said partition; and

means for sealing said air pressure chamber from said motor chamber at said aperture.

4,325,150
POOL SURFACE SKIMMING APPARATUS
H. E. Buddy, 3311 Bounty Cir., Huntington Beach, Calif. 92649
Filed Sep. 22, 1980, Ser. No. 189,680
Int. Cl.[3] E04H *3/20*
U.S. Cl. 4—490 **9 Claims**



1. A pool cleaning apparatus for removing the top layers of water in a swimming pool or the like, the apparatus comprising,

a body member,

a means for attaching said body member to said swimming pool,

a means for creating a suction within said body member, said creating means attached to said body member,

a second body member engageable with said body member, said second body member having an upper ring integral therewith,

a flotation means, said flotation means integral with said second body element,

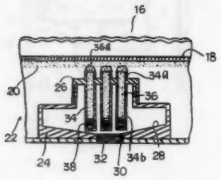
a filter means disposed within said body member and said second body member whereby fluid passing through said second body member passes through said filter means prior to existing said body member.

4,325,151

COOLING PILLOW WITH HEAT DISSIPATOR

An C. Wu, FL. 4-1, No. 58, Hsin-Yi Rd., Section 4, Taipei, Taiwan

Filed Mar. 12, 1980, Ser. No. 129,809
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—441 **6 Claims**



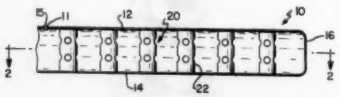
1. A cooling pillow with heat dissipator essentially including an upper cushion in the form of an elastic envelope and lower heat dissipator, said heat dissipator comprising a metal plate of good thermal conductivity, an absorbent fabric lamina in contact with and beneath said plate, a cooling means communicating with said absorbent fabric including a water tank and a cover therefor and a plurality of open-endedtubes containing absorbent material, said tubes extending above, through, and below said cover, the top of the absorbent material in said tubes being in contact with said absorbent fabric which contacts said plate and the lower ends of said tubes extending into said water tank.

4,325,152

FLOTATION MATTRESS

Michael Carpenter, 227 Easton S., Laurel, Md. 20810

Filed Feb. 28, 1979, Ser. No. 16,175
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—451 **19 Claims**



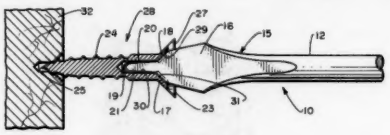
1. A flotation mattress comprised of flexible sheet material which forms a liquid-impermeable envelope having two opposing interior surfaces, a plurality of flexible damping chambers disposed within said envelope, said chambers having at least one opening to provide liquid communication between the liquid within the interior portion of said chambers and the liquid in said envelope surounding said chambers; each said chamber being comprised of a wall portion and upper and lower end portions, only one said end portion being fixedly attached to one of said opposing interior surfaces of said envelope and the other said end portion being substantially free to move relative to the other opposing interior surface of said envelope.

4,325,153

COMBINED SCREWDRIVER AND BORING APPARATUS

Charles Finnegan, 9582 Fairview Dr., Orangevale, Calif. 95662

Filed Oct. 22, 1979, Ser. No. 86,939
Int. Cl.³ B25F *1/00*; B25B *15/02*
U.S. Cl. 7—165 **5 Claims**



1. An apparatus for performing a hole in wood or the like, holding a screw prior to screwing the same into a substrate and screwing the screw into the substrate comprising:

a tool having a handle, an elongated shank extending from the handle, and a screw-engaging tip at the terminal end of said shank, said tip having oppositely disposed generally flat sides and a pair of oppositely disposed downwardly extending tapered cutting surfaces terminating in an elongated point; and,

a screw having a threaded shank and a tapered head, said head having a driver receiving slot therein, said slot having a first and a second portion, said slot's first portion being a downwardly extending elongated slot, and the second portion commencing at a point inwardly spaced from each end of said first portion and being a downwardly tapered slot conforming to the taper of the head, and communicating with said first portion,

said first portion having a pair of spaced opposed generally flat sidewalls forming said slot, the distance between said sidewalls being generally the same as the width of said flat sides so that said tip is insertable into said screw receiving slot in a manner providing a friction fit therebetween,

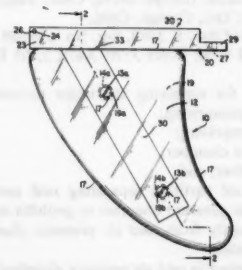
said screw shank having a generally centerally located downwardly extending bore communicating with said slot's second portion for receiving said point therein.

4,325,154

SURFBOARD FIN

William E. Collum, Jr., Millstone Dr., Southampton, N.Y. 11968

Filed Mar. 31, 1980, Ser. No. 135,500
Int. Cl.³ A63C *15/05*
U.S. Cl. 441—74 **11 Claims**



1. A surfboard fin consisting of a body formed of molded plastic being formed as a hollow cavity so as to be buoyant, and means connected to the body to join said body to a surfboard;

said plastic extending outwardly from said means so as to provide an outwardly extending external contour and fin profile so as to reduce drag on said fin while imparting buoyancy to the surfboard, said outwardly extending plastic being formed with a pair of facingly disposed shoulders disposed on opposite sides of said means, and opposed side members curving downwardly from said shoulders to form said external contour and fin profile.

4,325,155

DOCK LEVELER

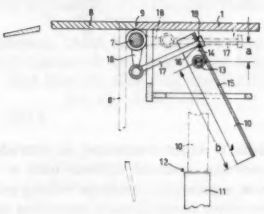
Kurt Alten, Ringstr. 14, 3015 Wennigsen, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,412

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914963

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **19 Claims**



1. A dock leveler for use with a ramp or dock having a ramp recess provided with an abutment support, said dock leveler comprising in combination:

a bridge plate pivotally journalled at its rear end on said ramp about a horizontal axis;

an extension pivotally connected to the front end of said bridge plate, said extension being pivoted downwardly in the rest position of said dock leveler, and being pivoted into the plane of said bridge plate in the working position of said dock leveler, said extension serving for exclusive support of said bridge plate upon a vehicle which is to be loaded or unloaded;

a pendulum-like support having a pivot shaft for pivotally connecting it near the front end of said bridge plate, said support providing support for said bridge plate upon said abutment support when dock leveler is not being used, i.e., is in the rest position;

a lever connected to said extension for pivoting therewith, said support maintaining a pivot position, for introducing said bridge plate into said ramp recess, by means of said lever, said support, in such pivot position being unable to correspond or align with said abutment support;

an extension prolongation of said support located beyond said pivot shaft on that end of said support remote from said abutment support; and

a pull rod pivotally connected to said lever, said pull rod engaging behind said extension prolongation whereby holding of said support by said pull rod exists until the pull rod releases said support by shifting of the pull rod in a direction toward the bridge rear end to increase reaction speed of said support during downward pivoting of said extension.

4,325,156

FLOOR SWEEPER WITH IMPROVED CONSTRUCTION

Henry J. Rosendall, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.

Filed Dec. 4, 1980, Ser. No. 212,857

Int. Cl.³ A47L *11/33*

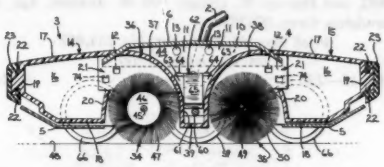
U.S. Cl. 15—41 R **21 Claims**

1. In a floor sweeper having a handle and a bail attached to said handle, a lower sweeping unit attached to said bail and comprising:

(a) a frame having transversely spaced longitudinally extending end plates,

(b) dust pans disposed at the front and rear end portions of said frame,

(c) front and rear transversely extending uni-directionally



rotatable brush rollers disposed inwardly from the respective front and rear dust pans,

(d) means to rotatably drive said brush rollers,

(e) and transversely extending deflector means disposed centrally between and serving both said front and rear brush rollers to assist said rollers in carrying debris up from the floor and hence longitudinally outwardly into the respective dust pans.

4,325,157

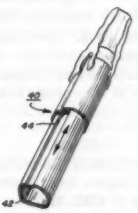
EXTENSION HANDLE

Peter Balint, Milwaukee, and Fredrick B. Burns, South Milwaukee, both of Wis., assignors to E Z Painter Corporation, Milwaukee, Wis.

Continuation of Ser. No. 65,089, Aug. 9, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,910

Int. Cl.³ B25G *1/04*

U.S. Cl. 15—144 B **1 Claim**



1. A paint applying tool capable of easy telescoping extension, less prone to binding due to dried paint drippings, comprising:

a paint applicator having a mounting bracket and a paint applying pad connected to said bracket;

a handle having at least two tubular sections which telescope one within the other, one tubular section having a larger diameter than the other, said larger diameter tubular section being releasably connected to said bracket on one end thereof, and having a series of aligned holes spaced along its length, said smaller diameter tubular section having an aperture near its end which is telescoped within said larger diameter tube and a spring biased detent extending through said aperture in said smaller diameter tubular section for selective engagement with any one of the aligned holes in said larger tubular section; and

alignment means located on each of said tubular sections to prevent rotation relative to one another, said means including a groove extending substantially along the length of one of said tubular sections and a mating tongue extending substantially along the length of the other of said tubular sections, said tongue being slidable in said groove to permit telescopic movement of said tubular sections,

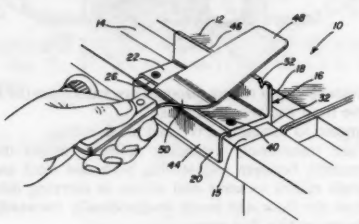
said alignment means on said larger tube section being located within the interior of said larger tube section.

4,325,158

SPATULA SCRAPER ATTACHMENT FOR COOKING GRILLE

Dale J. Divish, M.M.M. Sonesta St. L101, Umatilla, Oreg. 87882, and Harvey W. Driggs, 990 W. Juniper, Apt. #33, Hermiston, Oreg. 97838

Filed Nov. 28, 1980, Ser. No. 211,058
Int. Cl.³ A47L *17/00*
U.S. Cl. 15—236 R **6 Claims**



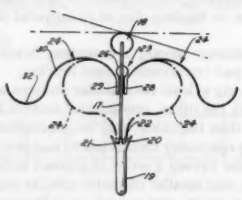
1. A spatula scraper attachment for a cooking grille, said attachment including an adjustable width inverted channel member including depending inner and outer side longitudinal flanges interconnected along their upper longitudinal marginal edge portions by a bight portion extending and secured therebetween, said channel members being positionable over the front transverse curb of a cooking grille with the opposing inner surfaces of said flanges opposing the front and rear sides of said curb and the latter frictionally gripped between said flanges, the inner longitudinal side of said channel member including an upwardly extending longitudinal scraping flange projecting upwardly above said bight portion and extending therealong, said scraping flange including an upper edge having a horizontally straight portion over which the under and upper surfaces of a spatula may be frictionally scraped in order to scrape food clinging to the spatula therefrom.

4,325,159

PAINT DRIP CATCHER

Laureano P. Rico, 29 Crimson Ave., Malverne, N.Y. 11565

Filed May 1, 1980, Ser. No. 139,277
Int. Cl.³ B05C *21/00*
U.S. Cl. 15—248 A **8 Claims**



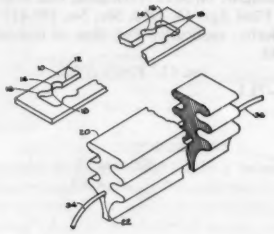
1. A paint applicator roller shield device comprising a pair of wing members formed of resilient flexible sheet material and being movable between oppositely laterally projecting extended positions and rearwardly extending contracted positions and in their normal unstressed condition being in said extended positions and in their contracted positions being rearwardly deformed, means releasably engaging the outer border of said wing members in their rearwardly contracted positions for releasably retaining said wing member in said contracted positions and means for separably attaching said pair of wing members to a paint applicator roller.

4,325,160

WINDSHIELD WIPER BLADE ASSEMBLY

Robert K. Burgess, Easton, Conn., assignor to Auto Parts Mfg. Inc., Branford, Conn.

Filed Jul. 21, 1980, Ser. No. 169,512
Int. Cl.³ B60S *1/38*
U.S. Cl. 15—250.06 **4 Claims**



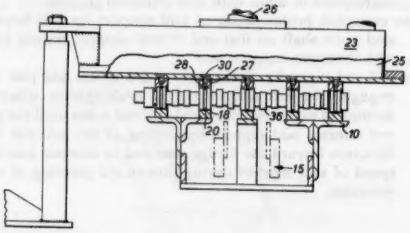
1. In a windshield wiper comprising an extruded blade of rubber or rubber-like material formed with a main body mounting portion, a generally triangular wiping portion, and a pair of complimentary longitudinally extending side grooves forming a thin section interconnecting the main body mounting portion and the generally triangular wiping portion, the improvement comprising a longitudinally extending heater wire having a round cross-section embedded in but non-adhering to the rubber or rubber-like material of the blade, said wire being positioned in the wider section of the generally triangular wiping portion in proximity to the neutral or elastic axis of the blade whereby when the blade is under stress during a windshield wiping operation the wire will cause minimum torsional resistance and bending stiffness in the blade.

4,325,161

WORKPIECE CLEANSING APPARATUS

Trevor E. Wood, Leamington Spa; Gene R. Cooper, Coventry, and Raymond Kemp, Birmingham, all of England, assignors to Otto Durr, Warwick, England

Filed Sep. 3, 1980, Ser. No. 183,407
Claims priority, application United Kingdom, Sep. 7, 1979, 31221/79
Int. Cl.³ A47L *5/38*
U.S. Cl. 15—304 **10 Claims**



1. A workpiece apparatus comprising:
conveyor means for transporting to a first work station a workpiece having an interior channel therein and at least one passageway extending from the interior channel to the exterior;
first support means for supporting said workpiece in said

first work station in such a manner that said at least one passageway is not blocked by the first support means;

first fluid flow means for causing pressurised fluid to flow through said at least one passageway in one direction;

second support means for supporting the workpiece in a second work station to which the workpiece is transported from the first work station by said conveyor means, the second support means being such that said at least one passageway in the workpiece is not blocked thereby; and

second fluid flow means for causing pressurised fluid to flow through said at least one passageway in the opposite direction.

4,325,162

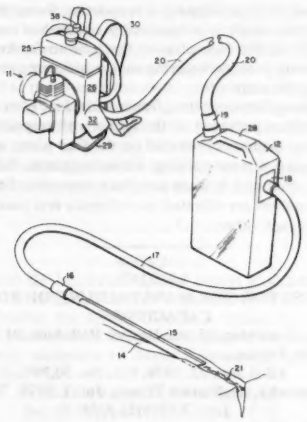
APPARATUS FOR COLLECTING MINERAL-BEARING DEBRIS

Earl W. Chambers, 23165 Eastbrook Ave., and John L. Doglietto, 23175 Eastbrook Ave., both of Los Altos, Calif. 94022

Filed May 29, 1980, Ser. No. 154,466

Int. Cl.³ A47L *9/32*

U.S. Cl. 15—327 C **4 Claims**



1. Apparatus for collecting soil and rocks from remote crevices and the like comprising:

a portable self-powered blower assembly having a first exhaust port and first intake port;

a collector separated from said blower assembly and comprising a closed container having an intake opening and an exhaust opening;

a harness for mounting said blower on the user's back;

a first flexible hollow tube connecting the intake port of said blower with the exhaust opening of the collector;

a rigid tubular elongated hollow member having one end suitable for probing remote crevices and a second end adapted for attachment to a flexible tube;

a second flexible hollow tube connecting the intake opening of the collector with the tubular member second end whereby the blower assembly can be energized to create a vacuum air flow inward through the rigid member for picking up soil and rocks;

second and third intake ports connecting with said blower assembly with a third flexible tube connected therebetween; and a flow-regulating intake port connecting with said third flexible tube to regulate the flow of air through said blower assembly.

4,325,163

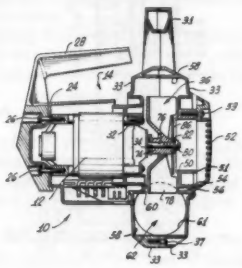
PORTABLE BLOWER-VACUUM UNIT

Charles A. Mattson, Woodland Hills; George M. Zink, Simi Valley, and Douglas A. Milliken, Thousand Oaks, all of Calif., assignors to Allegretti & Company, Chatsworth, Calif.

Filed Apr. 7, 1980, Ser. No. 138,166

Int. Cl.³ B02C *18/06*

U.S. Cl. 15—330 **23 Claims**



20. A blower-vacuum unit for selective operation in a blower mode, and in a vacuum mode, comprising:

a housing including means forming an air inlet and an air outlet;

a motor carried by said housing;

an impeller rotatably driven by said motor and positioned within said housing for drawing air into said housing through said air inlet, and for pumping the drawn air out of said housing through said air outlet;

an elongated blade mounted axially adjacent said impeller for rotation along with said impeller, said blade being interposed between said impeller and said air inlet and having a length spanning at least the cross-sectional dimension of said air inlet, said blade being formed from a material for chopping solid material drawn into said housing along with the drawn air prior to communication with said impeller;

nozzle tube means securable with respect to said housing in flow alignment with said air outlet when the unit is operated in the blower mode, and in flow alignment with said air inlet when the unit is operated in the vacuum mode;

a protective perforate cover plate movable to a position overlying said air inlet when the unit is operated in the blower mode; and

a vacuum bag securable to said housing for receiving the drawn air pumped out of said housing when the unit is operated in the vacuum mode.

4,325,164

OFFSET PIVOT HINGES WITH DOOR CLOSING DEVICES

Kyoichi Sasaki, Tokyo, Japan, assignor to Nippon Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1979, Ser. No. 66,658

Claims priority, application Japan, Aug. 19, 1978, 53-112962[U]; Feb. 14, 1979, 54-16604; Feb. 14, 1979, 54-16605; Feb. 14, 1979, 54-16606; Feb. 14, 1979, 54-166071; Jun. 27, 1979, 54-80078

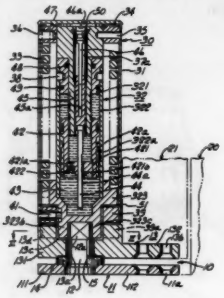
Int. Cl.³ E05F *3/20, 3/22*

U.S. Cl. 16—55 **13 Claims**

1. An offset pivot hinge with a door closing device easily and removably assembled thereto comprising:

said offset pivot hinge having a first plate member to be secured to one of a door and a floor or a door frame, a pivot pin secured onto a surface of one end portion of said first plate member, and a second plate member to be secured to the other of the door and the floor or the door frame, and being pivoted on said pivot pin at one end portion thereof; and

said closing device comprising an outer sleeve which is easily and removably mounted onto said second plate at one end of said sleeve, an inner member being mounted in said outer sleeve to be rotatable in relation to said outer sleeve and being removably connected to said pivot pin,



and a coil spring member disposed within said outer sleeve with one end of said spring being connected to said outer sleeve and with the other end being connected to said inner member so that said coil spring member may be twisted by a relative rotation of said outer sleeve and said inner member to provide the door closing torque.

4,325,165

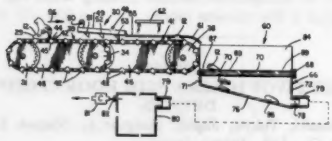
GIZZARD SPLITTER

Horace De Long, Rte. 6, Box 257 A, Macon, Ga. 31201

Filed Jan. 28, 1980, Ser. No. 115,960

Int. Cl.³ A27C *21/00*

U.S. Cl. 17—50 **9 Claims**



1. A method removing skin and the like from poultry parts comprising rotating in opposite directions of rotation the rolls of a pair of parallel juxtaposed helical toothed peeler rolls oriented in a substantially horizontal plane with their teeth meshed and with the adjacent surfaces of the peeler rolls moving downwardly and with some portions of the helical teeth of at least one of the rolls missing to form gaps in the teeth, placing a poultry part on the upper surfaces of the peeler rolls, inducing a flow of air in a downward direction between the peeler rolls to induce the skin of the poultry parts to move downwardly between the peeler rolls and inducing an increased flow of air between the peeler rolls as the gaps in the teeth of a peeler roll move downwardly adjacent the opposite peeler roll.

4,325,166

METHOD OF MANUFACTURING A COLOR TELEVISION DISPLAY TUBE

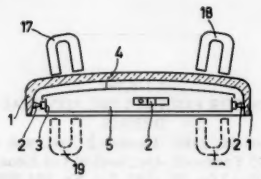
Hubert Göddecke; Werner Reichardt; Kurt Schumacher, all of Aachen, and Rainer Töpfer, Herzogenrath, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 39,538, May 16, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,915

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822345

Int. Cl.³ H01J *9/18*

U.S. Cl. 29—25.15 **8 Claims**



1. A method of positioning a supporting frame for a color television tube mask in a repeatedly obtainable rest position with respect to the face plate of the tube to facilitate a tube manufacturing process requiring such positioning, said method comprising the steps of:

A. attaching the supporting frame to the face plate by engaging holders provided on the frame with respective frame-locating members provided on the face plate; and

B. applying a time-varying electromagnetic field to the frame until said holders and their respective frame locating members are vibrated into ultimate rest positions relative to each other.

4,325,167

PROCESS FOR THE MANUFACTURE OF ROLLED CAPACITORS

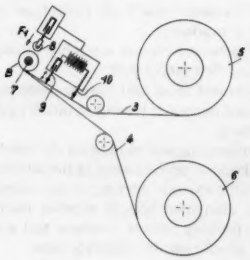
Jean M. L. Rosenberg, 83, rue Desiree Richebois, 94 Fontenay-Sous-Bois, France

Filed Jun. 22, 1979, Ser. No. 50,997

Claims priority, application France, Jul. 7, 1978, 78 20252

Int. Cl.³ H01G *4/18*

U.S. Cl. 29—25.42 **5 Claims**



1. A process of winding wound capacitors upon a rotating spindle by rolling at least two metallized films thereon to form a plurality of overlapping layers of which one is a radially innermost layer, comprising the steps of demetallizing a part of at least one of said films prior to rolling of the radially innermost layer and at least a first layer overlapping said radially innermost layer; bonding said radially innermost layer and at least said first overlapping layer together to form a unitary

substantially rigid sleeve on said spindle; and continuing the rolling of said two metallized films without bonding the remaining over-lapping layers together.

4,325,168

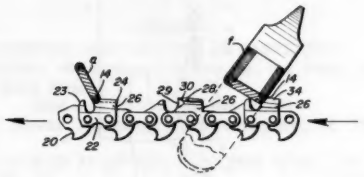
FILE FOR A CHAIN SAW

Kipling C. Swentzel, P.O. Box 58, West Milford, W. Va. 26451

Filed Jun. 30, 1980, Ser. No. 164,278

Int. Cl.³ B23D *71/00, 63/00*

U.S. Cl. 29—78 **5 Claims**



1. A long flat file for use on a chisel tooth chain saw, said file having a smooth flat upper and lower surface, rounded longitudinal side edges serrated to provide a filing surface, the filing surface at each side edge extending beyond the curvature for a distance onto the flat upper and lower surfaces in an area parallel to the longitudinal axis of the file, the thickness of the file adapted to fit between the depth guage and cutting tooth of a chain saw for longitudinal filing of the leading edge of the cutting tooth, and for routing and filing of the beveled edges of the cutting tooth, by pivoting the file about one longitudinal edge, the rounded edges of the file being semi-circular, and the thickness of the file being equal to the diameter of the semi-circle.

4,325,169

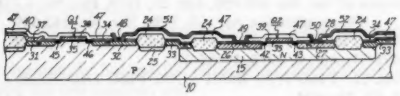
METHOD OF MAKING CMOS DEVICE ALLOWING THREE-LEVEL INTERCONNECTS

James E. Ponder, Cat Spring; Graham S. Tubbs; Perry W. Lou, both of Houston, all of Tex., and Stephen A. Farnow, Beaverton, Oreg., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 11, 1979, Ser. No. 83,700

Int. Cl.³ H01L *21/225;* **B01J** *17/00*

U.S. Cl. 29—571 **6 Claims**



1. A method of making complimentary insulated gate field effect transistors in an integrated circuit comprising the steps of:

(a) introducing N-type impurity into a selected area of a face of a P-type semiconductor body to provide a tank region for forming a P-channel transistor,

(b) selectively growing thick field oxide using an oxidation mask to provide a first enclosed surface area on said face spaced from said tank region and a second enclosed surface on said face within said tank region,

(c) introducing P-type impurity into the second surface area to produce conductor regions and to produce source and drain regions of the P-channel transistor, while masking the first surface area,

(d) and introducing N-type impurity into the first surface area to produce conductor regions and to produce regions of the N-channel transistor while masking said second surface area,

(e) there after depositing a layer of conductive material on said face over a thin gate insulator and patterning to provide a gate of an N-channel transistor in said first surface area but spaced from the source and drain regions and a gate of a P-channel transistor in said second surface area but spaced from the source and drain regions, the conductive material also extending across conductor regions but insulated therefrom,

(f) and implanting N-type and P-type inpurity into the first and second surface areas, respectively, self-aligned with said gates, adjacent said source and drain regions.

4,325,170

DEFLECTION CONTROLLED CYLINDER

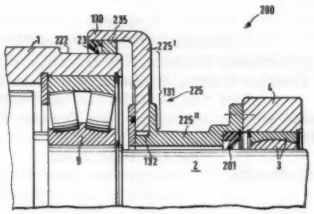
Hermann Verboom, Kempen; Peter F. Mingers, Willich-Anrath, and Valentin Appenzeller, Kempen, all of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,781

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938580

Int. Cl.³ B21B *13/02, 31/03*

U.S. Cl. 29—116 AD **11 Claims**



1. In a deflection controlled cylinder having a hollow cylinder which forms the working cylinder circumference and through which a stationary core extends lengthwise, leaving space all around from the inside circumference of the hollow cylinder, with means dividing the space between said core and said hollow cylinder into at least two longitudinal chambers, one on the side of the cylinder at which a roll gap will be established, said hollow cylinder being supported on the core with spacing by bearings at the end of the core, and being supported between the bearings against the core by the working pressure of a pressure medium supplied to said longitudinal chamber adjacent the roll gap, said controlled cylinder having at least one terminating cover which is provided at one end of the hollow cylinder, surrounds the core in ring fashion and is sealed by a sealing arrangement to prevent the escape of oil from the end of the cylinder at its outside and inside circumference, the improvement comprising, said sealing arrangement including a rotary seal which is radially seated and a rotary bearing holding said rotary seal at a predetermined distance from the sliding surface to compensate for displacement occurring when the core is bent, said rotary seal and rotary bearing disposed within the terminating cover enclosing the sealing arrangement.

4,325,171

MEANS AND METHOD FOR SEALING HEAT EXCHANGER WALLS

Elon J. Nobles, Minnetonka, Minn., assignor to Econo-Therm Energy Systems Corporation, Minnetonka, Minn.

Filed Oct. 15, 1979, Ser. No. 85,225

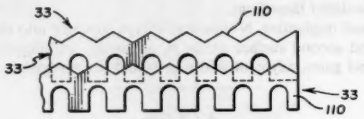
Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 C **32 Claims**

1. An end wall or intermediate baffle partition for a heat

exchanger having an array of substantially regularly spaced-apart tubes extending therethrough, said partition comprising:

a plurality of individual plates, each plate having at least one slotted aperture therein having a width which corresponds to the diameter of the tubes and which extends to the edge of the plate to receive a corresponding tube and each plate having sufficient width and height to overlap



adjacent plates and to cover the portions of the slots therein not occupied by the tube passing therethrough, said plates being sequentially positioned on the tubes in a plane perpendicular to the direction of the array of tubes so that each tube in the array is positioned in a corresponding aperture and the entire area between the tubes in the plane of the end wall or intermediate baffle partition is sealed by the overlapping portions of the plates.

4,325,172

ELASTIC RING EXPANDER

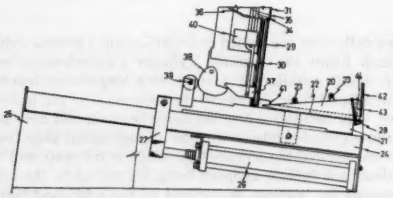
Ross J. Holdaway, Blenheim, New Zealand, assignor to Elastrator Company Limited, Blenheim, New Zealand

Filed Nov. 14, 1979, Ser. No. 94,295

Claims priority, application New Zealand, Nov. 14, 1978, 188914

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 **5 Claims**



1. An automatic elastic ring expander comprising: a substantially conical mandrel; a reciprocable push member which runs adjacent the surface of the mandrel; a fixed housing within which the mandrel is loosely held to allow some axial movement of the mandrel, the housing being open at each of opposite ends to allow placement of a ring to be expanded on the small diameter end and the removal of the expanded ring from the large diameter end of the mandrel; mandrel loading means, separate from the mandrel, which locates a ring to be expanded in a plane substantially at right angles to the mandrel axis with the ring center lying approximately on the line of the mandrel axis adjacent the small diameter end of the mandrel, the ring then being positioned such that, on a forward stroke of the push member, the push member engages the ring, locates it on the small diameter end of the mandrel and forces it to the large diameter end of the mandrel, thereby also moving the mandrel forwardly in the housing; and restraining means which abuts the periphery of the large diameter end of the mandrel and limits its said forward movement, the restraining means restraining the expanded ring from slipping off the large diameter end of the mandrel under the inherent contraction forces exerted by the expanded ring, release of the ring being effected by pushing the mandrel back from the restraining means.

4,325,173

METHOD AND APPARATUS FOR FINISHING A PAIR OF ELONGATE SLIDE FASTENER STRINGERS

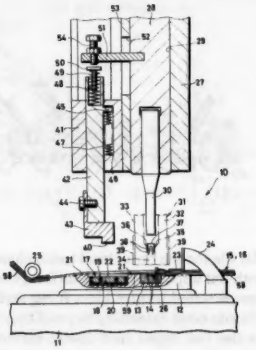
Kazuo Kirii, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,501

Claims priority, application Japan, Nov. 16, 1978, 53-141606

Int. Cl.³ B29D *5/00*; A41H *37/06*

U.S. Cl. 29—408 **9 Claims**



1. A method of finishing a pair of elongate slide fastener stringers including longitudinally spaced chains of interlocked rows of coupling elements mounted on a pair of respective stringer tapes, said method comprising the steps of:

(a) attaching end stops one at a time to the slide fastener stringers at terminal ends of the chains; and

(b) fusing the stringer tapes in a transverse direction thereof adjacent to said terminal ends substantially at the same time as said attaching step (a), said fusing step (b) beginning slightly earlier and ending slightly later than said attaching step (a).

4,325,174

COMPOSITE DRIVE SHAFTS

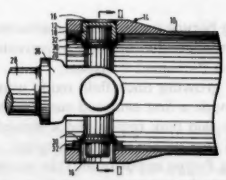
Derek R. Smith, and Gordon P. Worgan, both of Bristol, England, assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 898,900, Apr. 21, 1978, Pat. No. 4,218,895. This application Apr. 25, 1980, Ser. No. 143,629

Claims priority, application United Kingdom, Apr. 28, 1977, 17695/77; Apr. 4, 1978, 17695/78

Int. Cl.³ F16D *3/26*; B65H *81/00*; F16C *1/02*; B32B *1/08*

U.S. Cl. 29—434 **5 Claims**



1. A method of making a combination of a shaft and a universal joint of the Hookes type comprising: winding on a mandrel a plurality of layers of reinforcing fibres; impregnating the

fibres with an uncured resin either before, after or simultaneously with the winding; curing the resin to a rigid structure; removing the resulting tubular shaft from the mandrel; forming adjacent to one end thereof a pair of aligned, diametrically opposed bores; and inserting into each of said bores a journal bearing and subsequently or simultaneously supporting in said bearings the opposite end portions of one limb of a cross-shaped coupling, the other limb of which is received in a yoke member.

4,325,175

FASTENER AND METHOD OF FASTENING

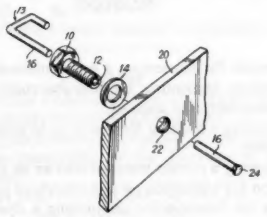
Nathan Milner, 404 Bordeaux, Marais Rd., Sea Point, Cape Town, South Africa

Filed Aug. 17, 1979, Ser. No. 67,461

Claims priority, application South Africa, Aug. 30, 1978, 78/4951

Int. Cl.³ B23P *11/00;* **B65D** *63/02;* **F16L** *33/22, 3/08*

U.S. Cl. 29—444 **10 Claims**



1. A method of fastening a first member to a second member comprising

(a) positioning the first member adjacent to the second member,

(b) passing a holding member having a free end, a holding end and a holding formation at the holding end through a bolt having a head end, an externally-threaded stud end and an axial bore therein from the head end of the bolt so that the holding member is freely rotatable in the bore, the shape of the holding formation being complementary to the shape of the first member for engagement therewith,

(c) forming a head at the free end of the holding member, said head adapted to bear on the mouth of the bore at the stud end of the bolt,

(d) locating the bolt in a threaded hole in the second member,

(e) engaging the holding formation of the holding member with the first member, and

(f) screwing the bolt into the threaded hole to apply tension between the holding formation of the holding member and the free end of the holding member to secure the first member to the second member.

8. An assembly including a fastener for securing a first member to a second member, the fastener comprising at least one bolt having a head end, an externally-threaded stud end an an axial bore therein, a holding member adapted to pass through and be freely rotatable in the bore in said at least one bolt, and a head formed at one end of the holding member for bearing on the mouth of the bore at the stud end of said at least one bolt, said holding member also including a holding formation adapted to engage with the first member, and said second member also including at least one threaded hole, said at least one bolt being adapted to be screwed into said at least one threaded hole to secure the first member adjacent to the second member.

4,325,176

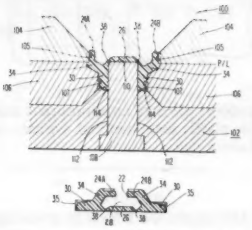
METHOD OF FORMING A ONE-PIECE MEMBER WITH A COMPARTMENT THEREIN

Kenard E. Urion, Woodbury, N.J., and Douglas R. Cleminshaw, Tully, N.Y., assignors to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 959,853, Nov. 9, 1978, Pat. No. 4,210,043. This application Jan. 11, 1980, Ser. No. 111,252

Int. Cl.³ B23P *11/02;* **B29C** *17/02*

U.S. Cl. 29—450 **9 Claims**



1. A method of forming a one-piece member having a compartment defined in part by a bottom wall, side sections joined to said bottom wall, a split upper wall formed in two segments, each of said segments being joined to one of said side sections and end closures at opposite ends of the compartment, each of said closures being formed by two end segments; said method including the steps of:

(a) molding the side sections at an angle to the bottom wall and joined to said bottom wall through thin, flexible hinge sections;

(b) molding both upper wall segments as continuous extensions of respective side sections and at angles relative to their required orientation in the completed member, one upper wall segment and its associated side section being joined to the bottom wall through one flexible hinge section and the other upper wall segment and its respective side section being joined to the bottom wall through the other flexible hinge section;

(c) molding each end segment employed in forming the end closures as a continuous extension of one of the upper wall segments and at an angle relative to the position it assumes in the completed member; and

(d) pivoting the side sections, upper wall segments and closure segments about the flexible hinge sections to move the upper wall segments into overlying relationship with at least a portion of the bottom wall and to close opposite ends of the compartment by said end segments.

4,325,177

MODULAR ART WALL SYSTEMS

Lieven L. DePoorter, 6031 SW. 82 Ave., Miami, Fla. 33143

Filed Jan. 19, 1979, Ser. No. 4,767

Int. Cl.³ B23P *25/00*

U.S. Cl. 29—458 **2 Claims**

1. A process for the formation of a decorative wall panel comprising the steps of:

a. providing a relatively thin sheet of a suitable malleable metal material, of a predetermined size and shape, and folding peripheral edge portions thereof inwardly at approximately 90 degrees to a main face panel thereof to generally define a shallow pan configuration;

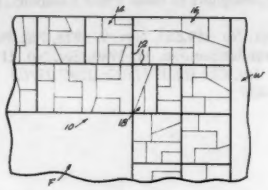
b. defining a plurality of randomly sized and configurated panel portions in said main face panel by impressed formation of a plurality of grooves therein;

c. forming a characteristic design in bold relief in at least one of said panel portions;

d. flowing a melt of solder into said grooves to a predeter-

mined depth, and allowing said solder to harden and form a permanent bond with said sheet;

e. creating various artistic designs in randomly selected said panel portions as desired;



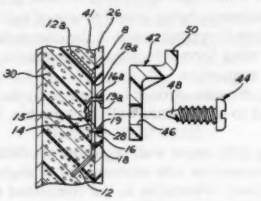
f. nesting a support block of an appropriate size, and formed of a suitable plastic foam material, within a cavity defined by said shallow pan.

4,325,178

SCREW ANCHORING DEVICE AND METHOD

Leslie L. Pruehs, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 5, 1980, Ser. No. 156,725
Int. Cl.³ B23P *3/00, 25/00;* F16B *37/04*
U.S. Cl. 29—458 **10 Claims**



1. A screw anchoring device for pre-assembled aperture sealing attachment with an apertured panel to confine insulating material foamed in place between the panel and a spaced wall comprising;

a flat portion having a central helical screw receiving impression with a retained knock-out central area capable of being displaced by a screw,

means for securing the device to the apertured panel with the screw receiving impression overlying the panel aperture, and

one or more wing portions formed integrally with the flat portion, said wing portions diverging from the plane of the flat portion in a direction away from the screw receiving impression and adapted to be imbedded in the foamed insulating material.

7. The method of securing a utility component to a panel of a composite structure having an attached spaced wall and foamed insulating material therebetween comprising;

forming an aperture in the panel;

securing a screw anchoring device to the panel, said device having a flat portion with a central helical screw receiving impression with a retained knock-out central area capable of being displaced by a screw and having one or more wing portions formed integrally with the flat portion, said wing portions diverging from the plane of the flat portion in a direction away from the screw impression, said screw anchoring device being secured to the panel such that the screw receiving impression overlies the panel aperture;

foaming insulation material between the panel and the spaced wall, with the wings of the device being imbedded therein;

placing the utility component on the opposite side of the panel from the screw anchoring device and overlying the panel aperture; and

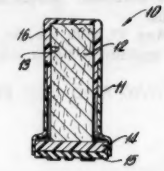
passing a screw first through the utility component, then through the panel aperture and then through the screw anchoring device whereby the knock-out portion of said device is displaced and the screw is retained in the central helical screw receiving impression.

4,325,179

PROCESS FOR FABRICATING A SELF-CONTAINED INK APPLICATOR FOR CONTINUOUS IMPRINTING ON NON-ABSORBENT SURFACES

Harold Werwa, 4120 NW. 88th Ave., Apt. 102, Coral Springs, Fla. 33065

Filed Jul. 30, 1980, Ser. No. 173,852
Int. Cl.³ B23P *25/00;* B41F *31/00;* B41K *1/40*
U.S. Cl. 29—458 **5 Claims**



1. A process for fabricating a self-contained ink applicator for continuous imprinting on non-absorbent surfaces, said process comprising the steps of;

(a) fabricating a housing formed so as to provide an interior chamber;

(b) immersing a porous material into an air drying ink composition for utilization on non-absorbent surfaces, said air drying ink composition comprising a dye, a resin and a solvent, said solvent being capable of enlarging the cell structure of a porous rubber die utilized in said self-contained ink applicator;

(c) placing within said interior chamber after immersing said porous material;

(d) mounting within said housing a porous rigid supporting member which is immediately adjacent to said interior chamber and in direct contact with said porous material;

(e) immersing said porous rubber die into an air drying ink composition for utilization on non-absorbent surfaces, said air drying ink composition comprising a dye, a resin and a solvent, each being identical to that utilized regarding the immersion of said porous material; and

(f) mounting onto said housing said porous rubber die immediately after the immersion of said porous rubber die into said air drying ink composition, said porous rubber die being mounted onto said housing immediately adjacent to and in direct contact with said porous rigid supporting member, said porous rubber die having exposed on its exterior surface after mounting onto said housing a formed predetermined imprint.

4,325,180

PROCESS FOR MONOLITHIC INTEGRATION OF LOGIC, CONTROL, AND HIGH VOLTAGE INTERFACE CIRCUITRY

Patrick A. Curran, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 15, 1979, Ser. No. 12,267
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **16 Claims**

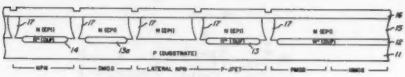
10. A process for the monolithic integration of a semiconductor circuit having D-MOS and high performance vertical NPN components, comprising the steps of:

(a) selectively forming an n+ region at the surface of a monocrystalline p-type semiconductor substrate, at each

location where a vertical NPN component is to be fabricated;

(b) epitaxially forming a monocrystalline n-type surface layer on said substrate, covering each n+ location, and each location where a D-MOS component is to be fabricated;

(c) forming p+ regions extending through said epitaxial layer to provide pn junction isolation between components;



(d) selectively forming a lightly-doped p-type region in the isolated portion of said epitaxial layer where D-MOS is to be fabricated.

(e) selectively forming medium doped p-type regions constituting the vertical npn base and the D-MOS gate contact;

(f) then selectively forming n-type regions constituting the vertical NPN emitter, the vertical NPN collector contact, and D-MOS source and drain, respectively;

(g) then selectively forming gate oxide over the D-MOS channel; and

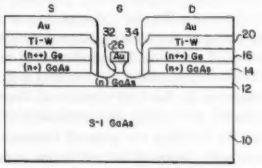
(h) then completing contact vias and metallization.

4,325,181

SIMPLIFIED FABRICATION METHOD FOR HIGH-PERFORMANCE FET

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,306
Int. Cl.³ H01L *21/20*
U.S. Cl. 29—571 **8 Claims**



1. A method for producing a high-performance FET comprising the steps of:

forming on a semi-insulating semiconductor substrate an N-type layer of the substrate material which will constitute the active channel of the FET;

forming on the N-type layer an (N+) layer of the substrate material;

forming on the (N+) layer an (N++) layer of lower bandgap material;

cutting a channel through the (N++) lower-bandgap material and the (N+) semiconductor to form a gate channel along the top of the (N) layer of semiconductor;

forming a layer of refractory metal on all exposed portions of the previous layers;

forming a layer of metal on the refractory metal layer;

using a common mask to delineate the areas which are to to be the gate, source and drain electrodes and forming a properly exposed photoresist layer under said comon mask;

cutting through said exposed photoresist and metal layers to form metal source, gate and drain electrodes of the proper size; and

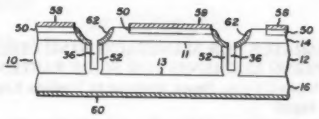
cutting through the refractory metal in the gate channel region to remove the remaining refractory metal lying above the active channel except for a stalk under the gate electrode and a pair of vertical regions extending from the refractory metal layers lying under the metal source and drain electrodes to the top of the active channel layer.

4,325,182

FAST ISOLATION DIFFUSION

Edward G. Tefft, Auburn, and Bernard R. Tuft, Scipio Center, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,832
Int. Cl.³ H01L *21/263, 21/302*
U.S. Cl. 29—583 **26 Claims**



1. A method for forming a low residual stress recess in a body of semiconductor material comprising:

selectively damaging the semiconductor body at the location of the recess to be formed, said damaging step producing a localized relatively high residual stress at the location of said recess, and

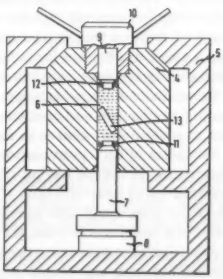
dry etching said body at least in said damaged region to remove substantially all of the damaged material thereby providing said low residual stress recess in said body.

4,325,183

PROCESS FOR PRODUCING AN ELECTRICAL RESISTOR HAVING A METAL FOIL BONDED TO A CERAMIC OR GLASS-CERAMIC SUBSTRATE

Adi F. Khambatta, Whitley Bay, England, assignor to Welwyn Electric Limited, Northumberland, England

Division of Ser. No. 897,983, Apr. 20, 1978, abandoned, which is a division of Ser. No. 830,750, Sep. 6, 1977, abandoned. This application May 7, 1979, Ser. No. 36,707
Claims priority, application United Kingdom, Sep. 7, 1976, 36995/76; Mar. 2, 1977, 8735/77
Int. Cl.³ H01C *17/28*
U.S. Cl. 29—621 **5 Claims**



1. A process for producing an electrical resistor which comprises:

placing a ceramic or glass-ceramic substrate, the surface of which is provided with small cavities or pores, and a self-supporting metallic foil into a sealed tightly fitting fluid impervious envelope with adjoining surfaces of said substrate and said foil in direct contact with one another;

introducing said fluid impervious envelope into a fluid;

applying to said fluid a pressure of at least two tons per square inch but less than that at which undesirable damage

is caused to said foil and/or to said substrate, whereby an equal pressure is applied from every side to said foil and said substrate and said foil is plastically deformed to intrude into and be retained within said small cavities or pores of the adjoining surface of said substrate so that direct adhesion of said foil to said substrate is achieved without any intervening bonding agent; and

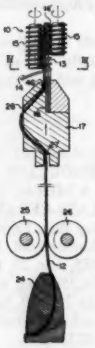
securing electrically conductive terminals in electrical contact with spaced apart regions of said foil.

4,325,184

APPARATUS FOR MANUFACTURING COILED COUPLING ELEMENTS FOR SLIDE FASTENERS

Shigenori Omori, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 971,645, Dec. 20, 1978, abandoned. This application Nov. 25, 1980, Ser. No. 210,296
Claims priority, application Japan, Dec. 30, 1977, 52-158065
Int. Cl.³ B29D *5/00*
U.S. Cl. 29—766 **9 Claims**



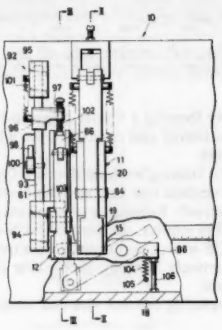
1. In apparatus for the manufacture of a continuous length of helicoidal-coil type coupling element together with a continuous core cord received in place therein, the apparatus being of the type including a coiler mechanism for coiling a continuous filament while introducing the core cord into place within the convolutions of the coil, and a reciprocating member disposed adjacent to the coiler mechanism and controlled by a reciprocating mechanism to reciprocate relative to the coiler mechanism during the formation of each convolution of the coil, the improvement comprising means for paying off the core cord, means adapted to be actuated intermittently, at a speed slightly higher than the speed at which each coil convolution is formed around a mandrel of the coiler mechanism, for forcibly pulling away from the pay-off means successive unit lengths of the core cord and delivering each unit length without tension to the coiler mechanism in step with the corresponding convolution of the coil such that the core cord is substantially slack at the point of delivery to the coiler mechanism during the time that the reciprocating member is moving away from the pulling means, each unit length being longer than a pitch of each convolution of the coupling element, and a passageway in the reciprocating member through which the core cord passes from the pulling means to the coiler mechanism, the passageway being adapted to hold the core cord at least party in frictional contact with the reciprocating member, the reciprocation of which is towards and away from the pulling means.

4,325,185

APPARATUS FOR GAPPING A CONTINUOUS SLIDE FASTENER STRINGER

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,827
Claims priority, application Japan, Dec. 28, 1978, 53-164829
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—770 **5 Claims**



1. An apparatus for gapping a slide fastener stringer having a continuous row of fastener elements having leg portions secured to a stringer tape along one longitudinal edge thereof, said apparatus comprising:

(a) a frame;

(b) a presser unit mounted on said frame remotely from the tape side of the stringer and having a punch and die, said punch and die normally being separated from each other by a first laterally unobstructed space for receiving a first portion of a manually fed stringer edgewise, the fastener elements being at the leading edge during such receiving, at least one of said punch and die being movable toward and away from the other for pressing a group of the fastener elements, in the first portion of the stringer placed therebetween, to reduce the thickness of their leg portions, and for holding the pressed fastener elements;

(c) a gripper unit disposed on said frame remotely from the tape side of the stringer and along-side said pressure unit and having a pair of relatively pivotable grip members, said grip members normally being separated from each other by a second laterally unobstructed space for simultaneously receiving a second portion of the manually fed stringer edgewise, the fastener elements being at the leading edge during such receiving, the grip members being adapted to grip the tape on the opposite sides of the second portion of the stringer from the fastener element side thereof while encircling the adjacent fastener elements, the gripper unit being spaced away from the presser unit in a longitudinal direction of the stringer, said gripper unit being movable on said frame between its normal position and an advanced position in an arcuate path for moving the gripped second portion of the tape to remove said group of fastener elements from said first portion seriatim;

(d) a first drive means operatively connected to said one of said punch and die for moving the same toward and away from each other;

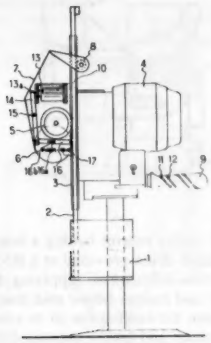
(e) a second drive means operatively connected to said gripper unit for moving the same between said normal and advanced positions; and

(f) a third drive means operatively connected to one of said grip members for moving the same toward and away from the other.

4,325,186
PROTECTION DEVICE ADAPTABLE FOR VERTICAL BLADE CUTTERS

Claude Creton, Residence des Acacias Batiment E3, Avenue de Saige, 33600 Pessac, France

Filed Apr. 24, 1980, Ser. No. 143,296
Claims priority, application France, Apr. 26, 1979, 79 11214
Int. Cl.³ B26B 7/00
U.S. Cl. 30—275 11 Claims



1. Protection device adapted for use with a vertical blade cutter comprising a cutting blade, said device comprising:

(a) a moveable plate for covering said blade and protecting against accidental contact with said blade, said moveable plate being adapted to be retracted during cutting and further being adapted to be otherwise lowered in front of said blade;

(b) a bar adapted to slide in a guide adapted to be attached to said cutter, said moveable plate being mounted on said bar;

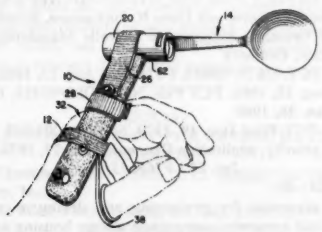
(c) a plate support journaled on said guide; and

(d) a rotatable wheel movably attached to said plate support, said rotatable wheel, when brought into contact with said bar while rotating, being adapted to raise said bar and moveable plate and whereas disengagement of said wheel from said bar causes said moveable plate to be lowered in front of said blade by virtue of its own weight and that of the plate.

4,325,187
SWIVEL SPOON FEEDING DEVICE

Phyllis E. Wasson, 12814 Prestwick Dr., Oxon Hill, Md. 20022

Filed Dec. 31, 1979, Ser. No. 108,650
Int. Cl.³ A47J 43/28
U.S. Cl. 30—327 4 Claims



1. A swivel utensil feeding device comprising:

a handle adapted to be grasped by the hand of a user;

a support attached to one end of said handle;

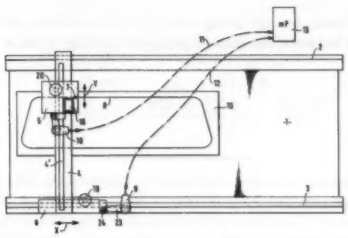
a food holding portion, said food holding portion containing a means for holding the food and an elongated member swivelly attached to the end of said support; and

means for encircling the hand of the user and said handle, for maintaining the utensil within the user's grasp.

4,325,188
TRACING TABLE FOR RECORDING THE PROGRAM FOR AN AUTOMATIC MACHINE, IN PARTICULAR FOR CUTTING GLASS

Heinz-Josef Reinmold, and Josef Audi, both of Aachen, Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 9, 1979, Ser. No. 92,972
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850127
Int. Cl.³ G09G 3/00
U.S. Cl. 33—1 M 7 Claims



1. A Cartesian coordinate driving table for entering a program into a memory of an automatically controlled machine, the table having a ferromagnetic guide bar extending in the X direction, a ferromagnetic guide bar extending in the Y direction, a cursor, a first rotary pulse generator responsive to movement of the cursor in the X direction and a second rotary pulse generator responsive to movement of the cursor in the Y direction, the improvement comprising in having a carriage slidable along the guide bar extending in the X direction, in that said first rotary generator is mounted on said carriage, in that said guide bar extended in the Y direction is mounted on said carriage, in that said cursor is slidable along said guide bar extending in the Y direction, in that said second pulse generator is mounted on said cursor, in that each of said pulse generators has a rotatable shaft including a driving roller having a magnet thereon contacting a guide bar with a roller being driven by frictional engagement with a guide bar, and in that the driving roller of at least one pulse generator is interchangeable with a roller of different diameter for tracing a coordinate which deviates along at least one of the coordinates from the pattern to be reproduced.

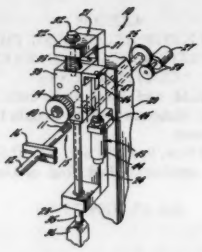
4,325,189
METHOD AND APPARATUS FOR CHECKING A GEAR

George E. Fransson; Stuart J. Johnson, and Edward W. Haug, all of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 27, 1980, Ser. No. 153,599
Int. Cl.³ G01B 5/14; G01M 13/02
U.S. Cl. 33—179.5 B 11 Claims

1. Apparatus for checking a sample gear having a central axis, said apparatus comprising means for holding said gear rotationally stationary in a checking station, a support, a head mounted on said support to rotate about an axis alined axially with the axis of said gear, a carriage mounted on said head to rotate therewith and to move back and forth on said head along a path extending perpendicular to the rotational axis thereof, a master gear mounted on said carriage to rotate about an axis extending parallel to and offset radially from the axis of said sample gear, means for bringing said master gear and said

sample gear into engagement and for turning said head about its rotational axis to cause said master gear to orbit and roll around said sample gear, and means responsive to the move-



ment of said carriage along said path for indicating the radial distance between the axes of said gears during rotation of said head.

4,325,190

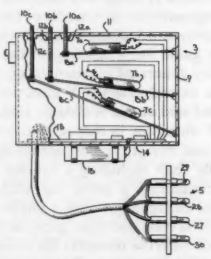
BOW SIGHT

Thomas Duerst, 720 Balcom St., Eau Claire, Wis. 54701

Filed Aug. 25, 1980, Ser. No. 180,669

Int. Cl.³ F41G *1/00*

U.S. Cl. 33—265 **5 Claims**



1. A bow sight comprising:

a. a casing for mounting on the bow,

b. an electrical energy source mounted on said casing,

c. a plurality of switches mounted in said casing, each of said switches being operable by a different predetermined vertical inclination of the bow,

d. a plurality of light emitting sight pins connected to the bow in a vertically spaced relationship, said sight pins operably connected to said energy source through said switches, each of said sight pins being designated for use at a preselected shooting range and

e. circuit means mounted in said casing and operable to selectively energize one of said sight pins upon detection of each of said different predetermined angles of bow inclination by one of said switches whereby the designated sight pin is illuminated for the preselected shooting range corresponding to said predetermined bow inclination.

4,325,191

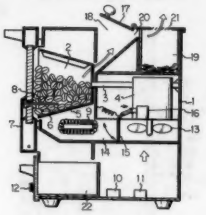
COFFEE ROASTER

Ryohei Kumagai, Kodaira, and Kazuo Maruta, Tokyo, both of Japan, assignors to Advance Company Limited, Tokyo, Japan

Filed May 16, 1980, Ser. No. 150,648

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—54 **4 Claims**



1. An automatic coffee roaster having a compact structure, comprising a rotatable drum provided at a side thereof with a plurality of ventilation holes, an air supplying duct arranged at a lower portion of said roaster below said drum and provided therein with a heater, for heating the air to roast coffee beans, and a fan, which heater and fan are separated from each other by an air flow rate adjusting plate, an exhaust duct arranged at an upper portion of the roaster above said drum and provided therein with a hood for covering an inlet portion of the duct, a recovery vessel for receiving thin husks which become separated from the coffee beans, a roasting control mechanism including a switching device which disconnects said heater on receipt of a detection signal from a temperature sensing device which is mounted on an inner surface of said drum so as to detect the surface temperature of coffee beans therein, and an air supply control mechanism, including an air flow adjustor device, connected to said switching device which operates to open the adjusting plate so as to increase air flow to the drum for rapidly cooling the roasted coffee beans at the same time as said heater is disconnected, the air flow adjustor device normally operating to close said adjusting plate so as to supply a small volume of air flow to said drum through the small perforation holes located in the adjusting plate, which air is heated during the roasting operation, whereby coffee beans are homogeneously roasted and thereafter rapidly cooled in said roaster through automatic consecutive operations while effecting efficient recovery of the thin husks which become separated from the coffee beans during roasting.

4,325,192

APPARATUS FOR DISSICANT DRYING AND CONVEYING OF A GRANULATE AND A VALVE MEANS PREFERABLY FOR USE WITH SAID APPARATUS

Poul Larsen, Elsinore, and Hans B. Jochumsen, Frederikssund, both of Denmark, assignors to Lejbolle Maskinfabrik APS, Tranekaer, Denmark

PCT No. PCT/DK79/00060, § 371 Date Aug. 13, 1980, § 102(e) Date Aug. 13, 1980, PCT Pub. No. WO80/01315, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 18, 1979, Ser. No. 201,063

Claims priority, application Denmark, Dec. 19, 1978, 5707/78

Int. Cl.³ F26B *15/08*

U.S. Cl. 34—80 **4 Claims**

1. An apparatus for preheating and drying a granulated material, said apparatus comprising: a drier housing adapted to be connected to the material inlet of a plastic processing machine;

a material inlet opening on said housing, said material inlet opening being adapted to be connected to a source of material to be dried;

a material discharge opening on said drier housing, said

material discharge opening being adapted to be connected to said plastic processing machine;

a reversible blower;

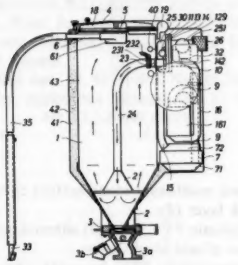
a heating means;

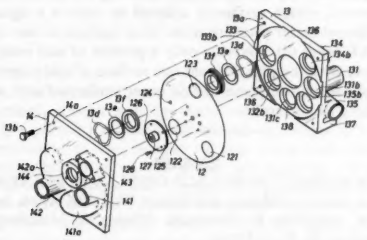
a multiport valve positionable in at least three operational positions plus a closed position and adapted to permit air flow in two direction;

an air drier;

a heat accumulator; and

conduit means connecting said housing with said blower, said heating means, said air drier and said heat accumulator, via the ports of said valve,





whereby a first air flow circuit is formed through said valve, said blower, said air drier, said heating means, said heat accumulator, said valve and said housing when said valve is in a first position and said blower is rotating in a first direction,

whereby a second air flow circuit is formed through said valve, said heat accumulator, said heating means, said air drier, said blower and said valve when said valve is in a second position and said blower is rotating in a second direction, and

whereby a third air flow circuit is formed through said material inlet opening on said housing, said valve and said blower when said valve is in a third position and said blower is rotating in said first direction.

4,325,193

SHELF ARRANGEMENT FOR FREEZE DRYING APPARATUS

Marc J. Thompson, New Paltz, N.Y., assignor to The Virtis Company, Inc.

Filed Nov. 26, 1980, Ser. No. 210,714

Int. Cl.³ F26B *13/30*

U.S. Cl. 34—92 **4 Claims**

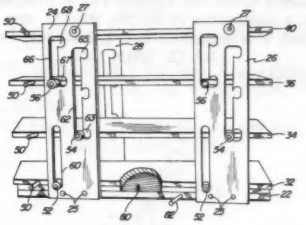
1. In a freeze dryer of the type including a sealable vacuum-tight drying chamber, a refrigerator condenser for condensing and freezing moisture removed from items being dried in the drying chamber, a vacuum pump connected to the drying chamber for evacuating the air from the drying chamber, and a cooling system for cooling the condenser; an improved shelf arrangement for use in the drying chamber comprising:

a rigid frame assembly having an upper bracket, and a lower bracket;

a plurality of slotted spacing members holding said upper bracket and said lower bracket in a spaced-apart relationship;

stop means provided in said spacing members at predetermined positions along respective slots of said spacing members;

a plurality of shelf means for supporting items to be dried in the drying chamber;



flange means mounted on said shelf means in suitable positions to slidably travel in said slots of said spacing members, said flange means adapted for positioning in said stop means so that the corresponding flange means of said shelf means are supported by respective ones of said stop means in predetermined positions between said upper bracket and said lower bracket; and

an inflatable elevating means mounted on said lower bracket, said elevating means operably connectable to the lowest shelf means of said plurality of shelf means to cause said lowest shelf means to move vertically when said elevating means is inflated.

4,325,194

SPORT SHOE SOLE

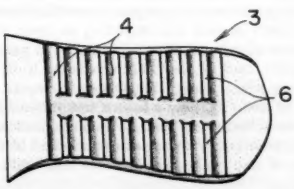
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan

Division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326.

This application Aug. 4, 1980, Ser. No. 174,891

Int. Cl.³ A43B *13/20, 21/28*

U.S. Cl. 36—29 **5 Claims**



1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel, transversely extending grooves on the surface of said interlayer body from its one side to its opposite side, each groove

communicating to each other at the center of the interlayer body, the cross section of each groove being semi-circular so as to have uniform distribution of stress, preferred absorbing power of impact load, and a durable shape, the resilience of the interlayer body and the interlayer sole and the air in the grooves permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing and good restoration and long durability of arched shapes.

4,325,195

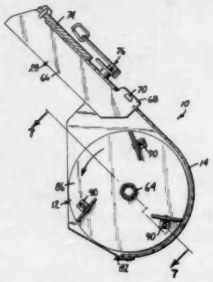
SNOW THROWER

Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 118,466, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 906,637, May 16, 1978, abandoned. This application Dec. 1, 1980, Ser. No. 211,985

Int. Cl.³ E01H *5/00*

U.S. Cl. 37—43 D **3 Claims**



1. A lightweight snow thrower capable of use similar to that of a manually powered snow shovel, comprising in combination:

(a) a snow directing housing, including a rear wall having a first portion whose cross-section is substantially arcuate and a second discharge portion extending generally tangentially of said first portion, which second portion, in normal use of the snow thrower, extends obliquely upward and forward in the direction of snow to be cleared at approximately 45° relative to a horizontal line through said second portion to maximize the distance of throw for snow thrown along said second portion;

(b) an impeller mounted in said housing with a portion of the periphery thereof closely adjacent to said first portion, said impeller including a plurality of blades mounted at the periphery thereof and including an open volume to the interior of said impeller to permit air to pass through said impeller, each of said blades mounted to have a working surface which is angled inward with respect to the periphery of said impeller, wherein said inward angle on said blades is between 5° and 25° with respect to a radial line from an axis of rotation of the impeller to the outermost edge of said blades, and wherein said blade working surfaces are substantially planar to further maximize distance of throw;

(c) drive means cooperating with said impeller to provide rotary drive of said impeller in a direction to move snow along said rear wall from said first portion to said second portion; and

(d) handle means fastened to the rear wall to enable an operator to maneuver the snow thrower, wherein the combined weight of said housing, impeller, drive means and handle means is sufficiently small so as to allow an operator to pick up the snow thrower and use the snow thrower by holding the snow thrower adjacent to the ground and by pushing the snow thrower in the manner of a manually powered snow shovel.

4,325,196

MULTILAYER IDENTIFICATION CARDS WITH RELIEF-LIKE SURFACE

Wolfgang Gauch, Otterfing; Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 861,420, Dec. 16, 1977, abandoned. This application Feb. 15, 1980, Ser. No. 121,886

Int. Cl.³ G09F *3/02*

U.S. Cl. 40—2.2 **2 Claims**

1. A laminated multi-layer identification card comprising:

a paper blank layer (2);

a top thermoplastic PVC layer (3) adhered under pressure to one surface of said blank layer;

a bottom thermoplastic PVC layer (4) adhered under pressure to an opposite surface of said paper blank layer; and

a paper strip (6) having intaglio printing (7) on one surface thereof, which surface is adapted to receive a signature, adhered under pressure to an outer surface of one of said PVC layer (3), covering only a portion of said outer surface, with the plane of said one surface of said paper strip disposed in the plane of said outer surface of said one of said PVC layers.

4,325,197

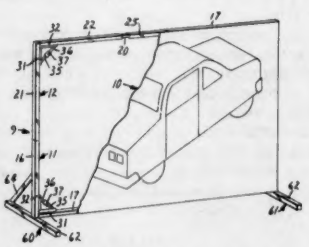
QUICK-ERECT PORTABLE DISPLAY STRUCTURE

David J. Achten, Oakdale, and Robert W. Fritts, Afton, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1981, Ser. No. 230,548

Int. Cl.³ G09F *15/00*

U.S. Cl. 40—610 **4 Claims**



1. A quick-erect portable display structure adapted to support a rectangular mural on a flexible fabric material, said structure comprising

four similar collapsible corner members each comprising a pair of hollow tubular legs pivotally connected adjacent one end and movable about an axis between a folded parallel position and a perpendicular position and each having a locking toggle to form a gusset between said legs, at least one leg of each member being formed with a projecting end portion adapted to fit in a hollow end of an adjacent tubular member and having a plurality of spaced

holes affording an adjustable locked position between said end portion and said adjacent member;

a strip of fastening tape adhered to a face of each leg of said corner members which face is disposed perpendicular to the axis of said pivotal connection;

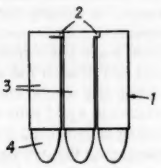
a pair of footings each formed of rigid straight tubular material of a predetermined length, each footing having a pin extending perpendicular thereto intermediate its ends for receiving one leg of a said corner member and having a brace extending from an end thereof adapted to connect with said one leg of said corner member for maintaining said structure in an upright position.

4,325,198

CARTRIDGE LOAD FOR REVOLVERS

Gerhard Muck, Peter Jordanstr. 159, A 1180 Wien, and Kurt Peter, Donaustr. 101/102, A 2344 Maria Enzersdorf-Südstadt, both of Austria

Filed Apr. 25, 1979, Ser. No. 33,223
Claims priority, application Austria, Apr. 27, 1978, 3038/78
Int. Cl.³ F42B *39/04*
U.S. Cl. 42—89 **6 Claims**



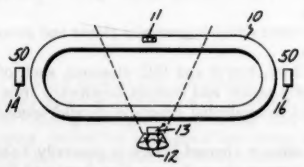
1. A cartridge load for a revolver cylinder having a plurality of angularly spaced cartridge-receiving bores, said load comprising a plurality of angularly spaced cartridges in number corresponding to the number of said bores and extending codirectionally from an end plane, and ligatures connecting each cartridge with a pair of adjacent cartridges to form an endless ring from said cartridges, each cartridge comprising a casing receiving a charge and a bullet, said ligatures being formed unitarily with and projecting from each casing at said plane, each of said ligatures being flexible and elastic to enable at least limited spreading of said cartridges to accommodate the load to various revolver cylinders.

4,325,199

ENGINE SOUND SIMULATOR

Timothy K. McEdwards, 1000 W. MacArthur Blvd., Apt. 31, Santa Ana, Calif. 92707

Filed Oct. 14, 1980, Ser. No. 196,840
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—232 **24 Claims**



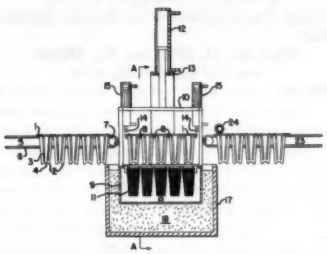
1. An engine sound simulating apparatus for a vehicle having drive means powered by an electric motor to propel the vehicle in a desired path, said drive means having a rotatable member that rotates in direct proportion to the speed of the vehicle comprising: digital switch sensor means responsive to the speed of rotation of the rotatable member for producing an output signal having a frequency proportional to the speed of the vehicle, signal converting means for receiving said output signal and converting said signal to a signal having a frequency that changes in response to ranges of speed of the vehicle, transmitter means connected to the signal converting means to transmit signals from the signal converting means, a plurality of receiver means located adjacent the path along which the vehicle is propelled for receiving the transmitted signals, said receiver means having speaker means providing an audio output simulating the operation of an engine powering the vehicle.

4,325,200

METHOD AND APPARATUS FOR FILLING SEEDLING POTS

Bengt G. L. Ovarnström, Rakvägen 2, S-230 22, Smygehamn, Sweden

PCT No. PCT/SE79/00229, § 371 Date Jul. 8, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/00906, PCT Pub. Date May 15, 1980
PCT Filed Nov. 7, 1979, Ser. No. 198,942
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—1 A **7 Claims**



1. A method for filling growth medium into seedling pots with perforated side and bottom walls, characterized by the following consecutive steps:

(a) a tray with the seedling pots is placed in a perforated matrix forming the lid of a closed box,

(b) the box with the tray and the pots is dipped into an aqueous suspension of growth medium,

(c) air and water are sucked from the box until the pots are filled with growth medium,

(d) the box is raised out of the suspension and

(e) the tray with the pots is separated from the box.

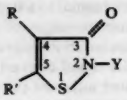
4,325,201

SEED TREATMENT WITH 3-ISOTHIAZOLONES

Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 910,730, May 30, 1978, Pat. No. 4,243,403, which is a division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,780, Mar. 9, 1967, abandoned. This application Dec. 10, 1979, Ser. No. 101,600
Int. Cl.³ A01C *1/06*; A01N *43/78*
U.S. Cl. 47—57.6 **7 Claims**

1. A method of protecting a seed subject to the attack of microorganisms selected from the group consisting of bacteria and fungi which comprises disseminating over the seed, a bactericidally and fungicidally effective amount of a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen, or a (C_1–C_4)alkyl group, and

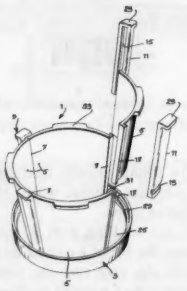
R′ is hydrogen, halogen, or a (C_1–C_4)alkyl group, or a salt of a compound of the above formula with a strong acid.

4,325,202

KNOCK-DOWN PLANT POT

Maurice Liard, 276, de Salaberry St., Joliette, Quebec, Canada (J6E 4G2)

Filed Jun. 13, 1980, Ser. No. 159,063
Int. Cl.³ A01G *9/02, 9/04*
U.S. Cl. 47—73 **4 Claims**



1. A knock-down plant pot separable into component parts whereby to free a plant when contained therein without affecting the radicular system of the plant, said pot comprising:

an upright lateral plant-retaining wall portion made up of a plurality of arcuate wall segments abutting one another along upright edges thereof and means releasably holding said segments in firm abutting relationship, said holding means including locking strips projecting outwardly of said segments, each strip being formed with a groove at the lower end thereof;

a saucer portion, for holding said wall portion, said saucer portion having an upstanding peripheral skirt and a series of horizontal thread portions projecting inwardly from said skirt and capable of being snugly received into said grooves at the bottom of said strips whereby said wall portion may be held firm in said saucer portion;

said thread portions being spaced from one another a distance sufficient to allow said strips to be inserted therebetween prior to be rotated, for engagement of said thread portions into said grooves; and

each segment being cut-out of a cylinder with tapered side edges and parallel top and bottom arcuate edges, whereby each segment can be removed during a transplantation without disturbing the earth surrounding said segment.

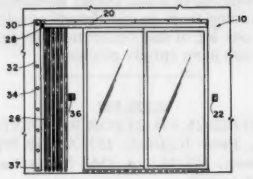
4,325,203

PATIO DOOR AND WINDOW GUARD SYSTEM

INVENTION

Jerome L. Wicks, 3401 Rockdale Ct., Baltimore, Md. 21207

Filed Apr. 29, 1980, Ser. No. 144,951
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—57 **10 Claims**



1. A system for guarding patio doors and the like against intrusion therethrough, said doors having interior and exterior faces, comprising: a plurality of rods having first and second ends, means for slidably holding said first end of each rod above a patio door interior face with each said rod depending vertically from the means for slidably holding; means for detachably securing respective middle portions of said rods in spaced succession across a said patio door, means for slidably receiving a said second end of each rod along a sill of a said patio door and preventing said second end from being pushed inward or outward relative to a said patio door; said means for slidably holding including an overhead track and a portion of each rod shaped for engaging the overhead track, the means for detachably securing including a detachable bar with a plurality of longitudinally spaced perforations therein for respectively receiving when in a horizontal position each of said plurality of rods in one of said perforations and sliding up said rods to said rod middle portions; and the means for slidably receiving comprising an upwardly open track for installation along the lower inside margin of a patio door opening in parallel spaced relation with said overhead track.

4,325,204

DOOR CONSTRUCTION

Walter I. Martine, 19767 Reedview Dr., Rowland Heights, Calif. 91748

Filed Jan. 10, 1980, Ser. No. 110,847
Int. Cl.³ E05F *15/06*
U.S. Cl. 49—372 **11 Claims**

1. A pocket door assembly including a header structure and comprising:

a first element which is generally planar and generally horizontal;

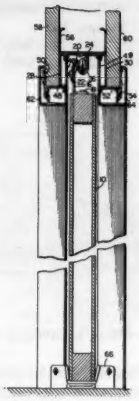
second, third, fourth and fifth elements, each of which is generally planar and extends downward from said first element in sequential generally parallel spaced relationship;

a roller support channel which is generally J-shaped, said roller support channel depending from said first element between said third and fourth elements;

said first through fifth elements forming portions of said header structure

a door which includes a generally planar door and a plurality of rollers extending upwards beyond the top of said door, said rollers being spaced a predetermined distance apart, said rollers being dimensioned and configured for engagement with said roller support channel, said second

and third elements including a plurality of slots spaced said predetermined distance apart; and



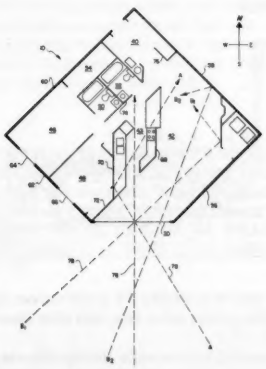
said slots being dimensioned to allow passage of said rollers into said roller support channel.

4,325,205

MODULAR SOLAR BUILDING CONSTRUCTION

Massoud A. Salim, and Thomas L. Hamacher, both of Salt Lake City, Utah, assignors to Tios Corporation, Salt Lake City, Utah

Filed Mar. 31, 1980, Ser. No. 135,367
Int. Cl.[3] E04H *1/00*
U.S. Cl. 52—79.1 18 Claims



1. Solar building construction comprising:

a five-sided building comprising a generally rectangular shaped building having a cut-off corner, said cut-off corner being defined by a diagonal cut along a generally vertical plane that intersects adjacent exterior walls of said building, a fifth exterior wall along said cut-off corner having more than one half of the surface area thereof as an opening through which solar rays from the sun may pass, said building being oriented so that said fifth wall is exposed to the sun for the longest possible time during the winter months when the sun is low in the sky, whereby solar rays from the sun may enter said building through said opening for a maximum time during daylight hours;

translucent enclosure means for selectively enclosing said opening of said fifth wall and preventing air from passing therethrough while still allowing passage of solar rays and light therethrough;

penetration means for allowing said solar rays to deeply penetrate into the interior of said building and be absorbed therein after said rays have passed through said opening; and

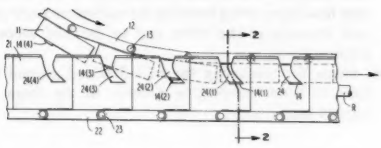
overhang means above and extending outwardly from said fifth wall for preventing said solar rays from entering through said opening of said fifth wall during the summer months when the sun is high in the sky.

4,325,206

GUIDE TUBE FOR SEWER RODDING MACHINE

Charles B. Caperton, P.O. Box 187, Spring Lake, N.J. 07762

Filed Apr. 14, 1980, Ser. No. 139,817
Int. Cl.[3] E04A *12/18*
U.S. Cl. 52—108 7 Claims



1. A rigid restraining tube for restraining sewer rod and the like against reaction forces, said tube comprising:

a. a first series of axially short hollow section halves on one side of the longitudinal center axis of the tube;

b. a second series of complimentary axially short hollow section halves on the other side of said center axis;

c. first link bars pivotally connecting together the section halves of said first series;

d. second link bars pivotally connecting together the section halves of said second series;

e. each section half of said first series having a pair of opposed laterally-extending ears;

f. each section half of said second series having a pair of curved slots for receiving the ears of a complimentary section half of said first series;

g. said section halves of said second series being larger circumferentially than the section halves of said first series;

h. said section halves of said second series having tangentially extended sidewalls;

i. said slots being located in said extended sidewalls;

j. said slots having greater width at the mouth and at the bottom and smaller width at a point intermediate said mouth and bottom;

k. said smaller width being less than the length of an ear, whereby said ear may pass through said intermediate point of said slot only if it is disposed at an inclined angle relative to the longitudinal center axis of said tube.

4,325,207

ARCH FORMING ASSEMBLY

Leslie T. Russell, Halifax; George M. Proctor, Cornwall, and William H. Bowes, Ottawa, all of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 21,333, Mar. 19, 1979, abandoned. This application May 2, 1980, Ser. No. 146,358
Claims priority, application Canada, Apr. 25, 1978, 301939
Int. Cl.[3] E04B *1/32;* E04C *3/46*
U.S. Cl. 52—641 6 Claims

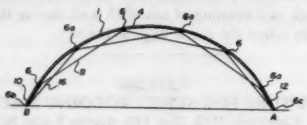
1. An arch forming assembly, comprising:

(a) a substantially flat flexible member for bending to the shape of the curved arch,

(b) a plurality of tension line guides attached to the flexible member at spaced intervals to a side of the flexible mem-

ber which will define the inside of the arch so that tension line guides will be spaced therearound,

(c) a first tension line attached at one end to a first side portion of the flexible member and threaded through even number tension line guides only, counted from the said first side portion to a second side portion opposed thereto, and attached at the other end to the second side portion,



(d) a second tension line attached at one end to the first side portion 10 of the flexible member and threaded through odd number tension line guides only, counted from the said first side portion towards the said second side portion, and attached at the other end to the said second side portion, and

(e) means for tensioning the said first and second tension lines to bend the flexible member to the shape of the curved arch.

4,325,208

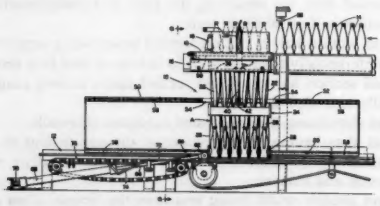
METHOD OF AND APPARATUS FOR UTILIZING AUXILIARY GRID IN CASE PACKER MACHINE

Theodore L. Barker, Hudson, Ohio, assignor to Figgie International Inc., Willoughby, Ohio

Filed Jan. 21, 1980, Ser. No. 113,692

Int. Cl.³ B65B *21/06, 57/04*

U.S. Cl. 53—448 **5 Claims**



1. A method of packing articles in case where streams of articles are supplied to a packer drop area, and are collected in a group of articles positioned in case filling relation on an upper grid at the drop area including the steps of:

positioning a lower grid of corresponding size and article grouping as the upper grid below and in vertical alignment therewith, dependent drop fingers being present on said lower grid,

moving a supply of cases along a horizontal course positioned below said lower grid,

stopping an empty case when it is moved into alignment with said grids,

sensing when a case is at said drop area and sensing when said grid is full of articles,

moving said lower grid downwardly when both of said sensing means are actuated, and

releasing articles on said upper grid simultaneously with start of movement of said lower grid downwardly.

4,325,209

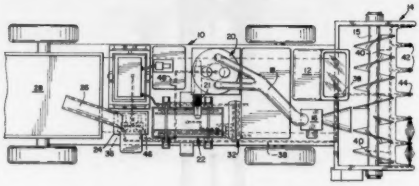
METHOD AND APPARATUS FOR IN-FIELD CROP HARVESTING

George B. Cicci, Burr Ridge, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 28, 1981, Ser. No. 258,254

Int. Cl.³ A01D *45/00, 55/00, 91/04*

U.S. Cl. 56—1 **18 Claims**



1. A method for harvesting a standing crop comprising the steps of:

separating a liquid portion from the crop; and

directing at least a portion of said liquid portion in a high pressure flow to sever the standing crop from the ground.

4,325,210

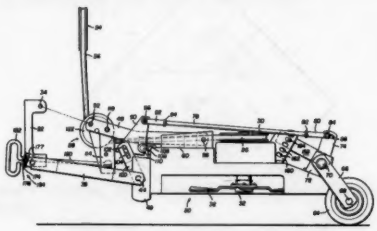
IDLER SHEAVE ASSEMBLY

John H. Marto, Oshkosh, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 18, 1980, Ser. No. 217,718

Int. Cl.³ A01D *69/08*

U.S. Cl. 56—11.6 **11 Claims**



1. An idler sheave assembly for a belt driven lawn mower having a flexible endless drive belt, said idler sheave assembly comprising:

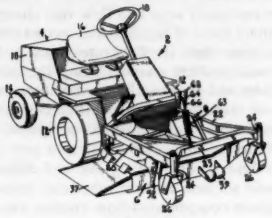
a support bracket, a fixed mule sheave rotatably supported on a first arm fixed to said bracket, a spring loaded rock sheave rotatably supported on a second arm generally parallel to said first arm, a shaft generally perpendicular to said arms extending through coaxially aligned apertures in said arms, an annular sleeve rotatably journaled on said shaft received through said second arm aperture, said second arm fixed relative to said sleeve and rotatable therewith, a torsion spring spirally wound around said sleeve having a first end fixed relative to said bracket and a free end fixed relative to said second arm spring biasing said spring loaded rock sheave relative to said fixed mule sheave, and an adjustment means adapted to incrementally adjust the position of said support bracket relative to said mower to adjust the tension of a drive belt received around said sheaves.

4,325,211

FLOATING DECK FOR RIDER MOWER

Robert H. Witt, Bloomington, and Walter J. Petersen, Eden Prairie, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Sep. 2, 1980, Ser. No. 183,293
Int. Cl.[3] A01D *35/26*
U.S. Cl. 56—15.8 8 Claims



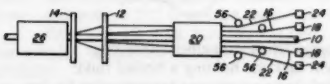
1. A vegetation cutting apparatus, which comprises:
(a) a base unit which is movable over the ground in a longitudinal direction;
(b) a cutting unit having means for cutting vegetation; and
(c) means for mounting the cutting unit on the base unit, wherein the mounting means comprises means for suspending the cutting unit from the base unit on at least two laterally spaced suspension points with the cutting unit free to move upwardly at each suspension point to allow the cutting unit to tilt side-to-side laterally relative to the base unit, wherein the suspending means comprises a suspension unit at each of the suspension points, wherein each suspension unit comprises a suspension member carried on the cutting unit which is received in an elongated vertical slot on the base unit to allow upward vertical movement of the cutting unit relative to the base unit at each of the suspension points, and wherein at least one of the suspension members on the base unit is also continuously longitudinally constrained in the vertical slot on the base unit to longitudinally couple the cutting unit to the base unit for movement therewith.

4,325,212

LAYING OPTICAL WAVEGUIDES AND ELECTRICAL CONDUCTORS ONTO A SUPPORT FILAMENT

Tomasz S. Hope nee Swiecicki, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 20, 1980, Ser. No. 208,567
Int. Cl.[3] D02G *3/44;* D01H *13/04;* B65H *81/08*
U.S. Cl. 57—15 3 Claims



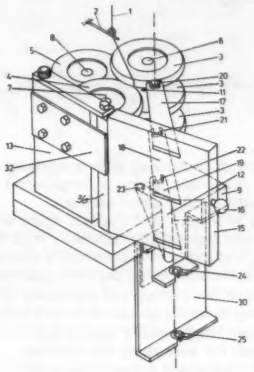
1. Apparatus for laying a set of optical waveguides and a set of electrical conductors on a support filament, the apparatus comprising one laying unit for laying waveguides on the filament, another laying unit for laying conductors on the filament, the laying units being spaced apart in laying positions along a feed path for the support filament through the apparatus, reeling-off positions for the waveguides and conductors upstream of the units to feed the sets of waveguides and conductors side-by-side to a first of the laying positions and one of the sets to a second of the laying positions, and means for holding one set separated from the other set as they move to the first laying position.

4,325,213

FRICTION FALSE TWIST APPARATUS HAVING IMPROVED YARN THREAD-UP CAPABILITY

Frank Adenheuer, Wuppertal, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,008
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932074
Int. Cl.[3] D01H *15/00;* D02G *1/08*
U.S. Cl. 57—280 11 Claims



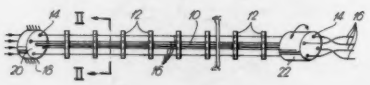
1. An apparatus for friction false twisting a moving yarn, and characterized by the ability to readily permit thread-up while the apparatus is in operation, and comprising
a mounting bedplate,
at least three spindles mounted to said bedplate for rotation about fixed, parallel axes which are positioned at the corner points of an equilateral polygon having a number of sides corresponding to the number of spindles, each spindle including a plurality of circular discs mounted for rotation therewith, and with the discs of the spindles overlapping at a point centrally between said spindles and defining an operative path of travel extending axially therebetween,
means for concurrently rotating each spindle in a common direction and such that twist is imparted to a yarn moving along said operative path of travel by contact with the rotating discs, and comprising a pulley coaxially fixed to each spindle, and a common endless drive belt operatively contacting each pulley,
movable yarn deflecting means for selectively moving a yarn from an inoperative thread-up position disposed laterally of said operative path of travel, toward said operative path of travel, and comprising at least one arm, and means mounting each such arm to said bedplate for movement in a plane perpendicular to the axes of said spindles, and
yarn guide means for guiding the moving yarn between said operative path of travel and a position exteriorly of the area encompassed by said endless drive belt, said yarn guide means including yarn catch means fixedly mounted in axial alignment with the operative path of travel and intermediate all of said discs and said drive belt for operatively engaging a running yarn upon the yarn being moved from said inoperative thread-up position toward said operative path of travel, and for then retaining the yarn in substantial axial alignment with the operative path of travel and against lateral movement in the opposite direction,
whereby the thread-up of the yarn through the apparatus may be readily accomplished while the spindles are operatively rotating, and without the need to manually thread

the yarn through the discs of the spindles, or through the area encompassed by the endless drive belt.

4,325,214
APPARATUS FOR STRANDING WIRE

Bretislav P. Zuber, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 106,375, Dec. 21, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,656
Claims priority, application Canada, Dec. 19, 1979, 342240
Int. Cl.³ H01B *13/04*
U.S. Cl. 57—293 **13 Claims**

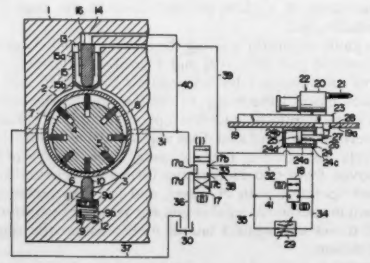


1. Apparatus for stranding wire comprising:
an elongate member having a longitudinal axis and being rotationally flexible about said axis;
a plurality of longitudinally spaced-apart wire guiding elements extending radially outwardly from the member and defining a plurality of longitudinally extending wire guiding holes, the holes being angularly spaced around the axis for passage therethrough of a plurality of wires and also being longitudinally spaced with each hole corresponding with other longitudinally spaced holes to define a single guide path for wire along the member;
wire twisting means at a downstream end of the member, in the sense of the direction of wire movement, the twisting means extending outwardly of and secured to the member and defining a plurality of longitudinally extending holes, one for each of the paths and angularly spaced around the axis;
holding means for holding the member stationary at a position upstream of the wire guiding elements and of the downstream end; and
means for rotating the downstream end of the member and the twisting means for a predetermined number of revolutions about the axis alternately in one direction and then the other.

4,325,215
HYDRAULIC APPARATUS

Toru Yamamoto, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation-in-part of Ser. No. 885,342, Mar. 10, 1978, abandoned. This application Mar. 4, 1980, Ser. No. 127,138
Claims priority, application Japan, Mar. 10, 1977, 52-26388
Int. Cl.³ F16D *31/02*; F04B *49/00*
U.S. Cl. 60—450 **7 Claims**

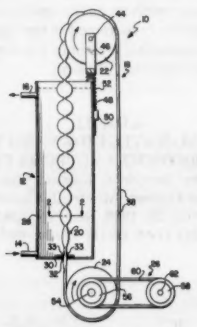


1. A hydraulic apparatus for changing the flow rate by displacing a flow rate changing membe: of a variable displacement hydraulic pump accommodated in a casing, comprising, in combination: an actuator, a first sliding member slidably received in a first cylinder chamber provided in said casing and movable in one direction to urge said flow rate changing member toward a direction where the flow rate of said hydraulic pump is decreased, a second sliding member slidably received in a second cylinder chamber provided in said casing and movable in said one direction to urge the flow rate changing member toward a direction where the flow rate of said hydraulic pump is decreased, a resilient member accommodated in said casing to resiliently urge said flow rate changing member against a resultant force of said first and second sliding member toward a direction where the flow rate of said hydraulic pump is increased, said resilient member being the only means for urging said first and second sliding members in a direction opposite to said one direction, a first fluid conduit having one end connected with an outlet port of said hydraulic pump and the other end thereof connected with a rear port of said actuator, a second fluid conduit having one end connected with a fore port of said actuator and the other end connected with a port of a pressure compensated flow control valve means for permitting pressure oil passing therethrough to be maintained constant in volume even with variations in pressure of the fluid, a third fluid conduit having one end connected with another port of said flow control valve means and the other end thereof connected with an inlet port of the hydraulic pump, a fourth fluid conduit having one end connected with said second fluid conduit and the other end connected with said first cylinder chamber, and a fifth fluid conduit having one end connected with said first fluid conduit and the other end connected with said second cylinder chamber.

4,325,216
THERMODYNAMIC FLOTATION ENGINE

Ronald F. Mermis, 1900 Gardenia Ter., Manhattan, Kans. 66502

Filed Jun. 2, 1980, Ser. No. 155,553
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—496 **15 Claims**



1. A thermodynamic engine comprising:
an upright tank for holding a heated fluid;
means defining a continuous loop member having a series of discrete heat-transferring bladder means thereon;
structure for supporting said loop member with an elongated portion thereof within said tank, and for allowing continuous shifting movement of the loop member through said tank with successive portions thereof moving into said tank at a lower region thereof, through the hot fluid therein, and thence out of said tank at an upper region thereof,
said tank including a loop member inlet at said lower region, and a loop member outlet at said upper region;
a quantity of liquid material within each bladder having a vaporization temperature below that of said hot fluid but above that of the ambient temperature exteriorly of said

tank, such that the material in each respective bladder means is successively converted to the gaseous form thereof as the respective bladder means passes through the hot fluid in said tank for causing upward shifting of the loop member by virtue of the buoyancy effect created by such vaporization, said material in each successive bladder means reconverted to the liquid form thereof after the respective bladder means pass out of said tank; and

power takeoff means operatively coupled to said loop member.

4,325,217

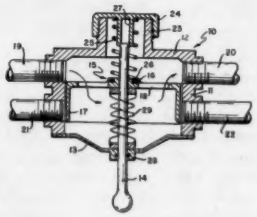
SOLID STATE ENGINE WITH ALTERNATING MOTION

Ahmad A. Golestaneh, Bolingbrook, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,868

Int. Cl.³ F03G 7/06

U.S. Cl. 60—527 **3 Claims**



1. A device for converting heat energy to reciprocating mechanical energy comprising:

a cylinder having inlet and outlet ports for hot water at one end of the cylinder to establish a warm end thereof and inlet and outlet ports for cold water at the other end of the cylinder to establish a cool end thereof opposite to the warm end,

a piston reciprocally contained within said cylinder having a warm side and a cool side corresponding respectively to the warm end and the cool end of said cylinder, said piston having openings therein for passage for water longitudinally therethrough,

means movable with said piston for alternately opening and closing said hot water and cold water ports,

a spring disposed within the cylinder bearing on the warm side of the piston, and

a double helix of a thermal memory material attached to the cool end of the cylinder and the cool side of the piston.

4,325,218

VACUUM BRAKE BOOSTER

Rolf Weiler, and Peter Böhm, both of Frankfurt, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,349

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908515

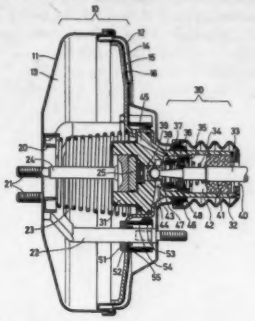
Int. Cl.³ B60T 13/00

U.S. Cl. 60—547 R **9 Claims**

1. A brake booster utilizing the differential of pressure between a vacuum and atmospheric pressure comprising:

a vacuum casing having at least one movable wall dividing said casing into a vacuum chamber and a working chamber and acting upon a push rod guided along a longitudinal axis of said casing; and

a base plate assembly distinct from said casing including a base plate disposed in said vacuum chamber having one surface thereof abutting one transverse end wall of said casing defining said vacuum chamber and another surface thereof parallel to and spaced from said one surface within said vacuum chamber, said another surface having at least two bars integrally formed therewith, said two bars extending into said casing substantially parallel to said push rod, penetrating said movable wall in a slidable sealed relationship and connected to the other transverse end



wall of said casing defining said working chamber and to a vehicle member, said one surface having a plurality of bolts integrally formed therewith upon which a master cylinder is secured to said booster, said plurality of bolts extending through said one transverse end wall.

4,325,219

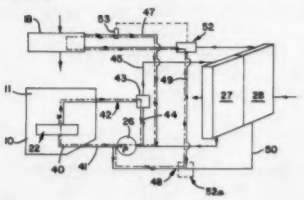
TWO LOOP ENGINE COOLANT SYSTEM

John H. Stang, Columbus, Ind., and Hiromasa Yamaguchi, Tokyo, Japan, assignors to Cummins Engine Company, Inc., Columbus, Ind. and Komatsu Ltd., Tokyo, Japan

Filed Dec. 31, 1979, Ser. No. 108,821

Int. Cl.³ F02B 29/04

U.S. Cl. 60—599 **11 Claims**



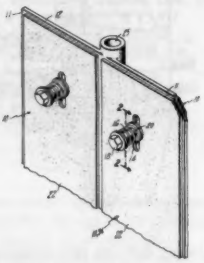
1. A coolant system for an internal combustion engine including an aftercooler for cooling the intake air flowing into the engine, said aftercooler having a coolant intake and a coolant outlet, and said engine including a block and a head, said coolant system comprising an engine loop and an aftercooler loop, a pump having an output, both of said loops including said pump, said engine loop including said pump, the engine block and head, a first radiator, and a first radiator bypass, said aftercooler loop including said pump, said intake of the aftercooler being connected to said output of said pump, a second radiator and a second radiator bypass connected to said inlet of said aftercooler, each of said loops further including a temperature responsive flow control thermostat for regulating the coolant flow through the associated radiator and said bypass, said thermostat in said aftercooler loop including a sensor located in said coolant outlet to sense the temperature of the coolant leaving said aftercooler.

4,325,220

CRYOADSORPTION PUMPS HAVING PANELS WITH ZEOLITE PLATES

David J. McFarlin, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 16,263, Feb. 28, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,157
Int. Cl.[3] B01D *8/00*
U.S. Cl. 62—55.5 3 Claims



1. Assembly for a cryoadsorption pump comprised of a high thermal conductivity metal panel adapted for cooling by a cryogenic fluid;

the metal panel having mounted thereon a zeolite plate in intimate but unbounded contact;

the zeolite plate made by a process which includes isostatically pressing powder having a poor size between $2\text{–}25\times10^{-10}$ m; and

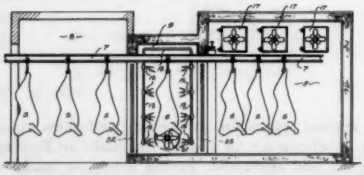
means for resiliently maintaining contact between the panel and the plate.

4,325,221

METHOD AND APPARATUS FOR REDUCING THE TEMPERATURE OF ARTICLES

Lloyd C. Grewar, Brassall, Australia, assignor to The Commonwealth Industrial Gases Limited, Surry Hills, Australia

Filed Jul. 26, 1979, Ser. No. 61,034
Claims priority, application Australia, Jul. 28, 1978, PD5267
Int. Cl.[3] F25D *13/06*
U.S. Cl. 62—63 7 Claims



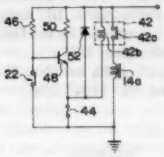
1. A method of refrigerating a freshly slaughtered suspended carcass having body weight in excess of 5 kg. comprising the steps of supplying cryogenic liquid to a pre-chilling station containing the suspended carcass after introduction of the carcass into the pre-chilling station, the supply being in timed sequence with the introduction of the carcass; quick chilling a thin outer layer of the entire carcass to seal the moisture therein by contacting all of the outer surface of the carcass with controlled usage of the supplied cryogenic liquid, and subsequently cooling the carcass throughout by placing it in a mechanically refrigerated cold room under conditions that ensure that the previously chilled outer layer does not thaw.

4,325,222

DEVICE RESPONSIVE TO UNUSUAL TEMPERATURE CHANGE IN REFRIGERANT COMPRESSOR

Teruo Nakamura, Konan, and Masami Otani, Higashimatsuyama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Diesel Kiki Company, Limited, Tokyo, both of, Japan

Filed Dec. 14, 1979, Ser. No. 103,580
Claims priority, application Japan, Jan. 10, 1979, 54-1651[U]
Int. Cl.[3] F25B *27/00*; G05B *5/00*; H02H *5/04*
U.S. Cl. 62—126 10 Claims



1. A refrigerant compressor driving device comprising:

an electromagnetic clutch for driving the compressor, said clutch being movable between a first position in which it connects the compressor to a driving means to drive the compressor and a second position in which it disconnects the compressor from said driving means;

an over-heating sensing means inserted into a refrigerant in said compressor to detect over-heating of the refrigerant, said over-heating sensing means being normally in on position and turned off in response to the refrigerant temperature being higher than a predetermined temperature;

a switch means connected with said over-heating sensing means and being turned on in response to turning off of said over-heating sensing means to produce a high level current; and

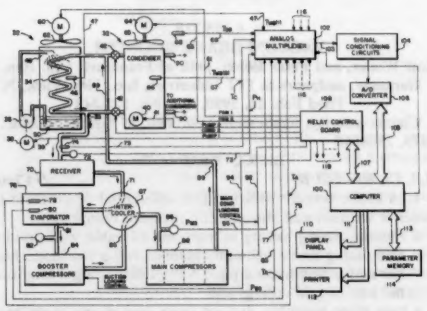
a circuit breaking element responsive to said high level current for breaking the power supply to said clutch for positioning the clutch into said second position.

4,325,223

ENERGY MANAGEMENT SYSTEM FOR REFRIGERATION SYSTEMS

Robert J. Cantley, 905 Versailles Ct., Maitland, Fla. 32751

Filed Mar. 16, 1981, Ser. No. 244,161
Int. Cl.[3] F25B *49/00*; F25D *3/00*
U.S. Cl. 62—126 35 Claims



1. An energy management system for a single stage refrigeration system having evaporative type condensers comprising:

A. a plurality of electrical temperature sensors attached to said refrigeration system, said sensors producing electrical

signals representative of operating parameters of said refrigeration system including
a. wet bulb temperature,
b. dry bulb temperature,
c. condensing temperature, and
d. ambient temperature;

B. a plurality of electrical pressure sensors attached to said refrigeration system, said pressure sensors producing electrical signals representative of operating parameters of said refrigeration system including
a. head pressure, and
b. suction pressure;

C. signal processing circuits connected to said temperature sensors and said pressure sensors for receiving said respective electrical signals therefrom for producing a sequence of binary digital signals representative of said electrical signals;

D. computer means connected to said signal processing circuits for receiving said sequence of binary digital signals, said computer means having memory means for storing system design parameters, said computer means programmed to periodically calculate other operating parameters of said refrigeration system including
a. relative humidity,
b. efficiency of said refrigeration system,
c. temperature difference between said condensing temperature and said wet bulb temperature,
d. difference between said head pressure and said suction pressure, and
e. the cost to operate said refrigeration system;

E. control relays connected to said computer means for controlling, in said refrigeration system,
a. condenser fans in response to calculated value of said difference between said condensing temperature and said wet bulb temperature,
b. condenser pumps responsive to the calculated value of said difference between said condensing temperature and said wet bulb temperature, and
c. compressor loading responsive to calculated value of said diffference between said head pressure and said suction pressure; and

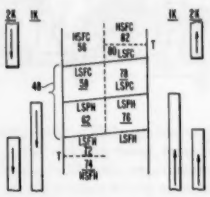
F. first alarm means responsive to a deviation of said head pressure relative to said condensing temperature to indicate presence of non-condensible gases in said refrigeration system, and second alarm means responsive to said difference between said condensing temperature and said wet bulb temperature to indicate fouled condensers in said refrigeration system.

4,325,224

METHOD AND APPARATUS FOR TRANSPORT REFRIGERATION SYSTEM CONTROL

Leland L. Howland, Belle Plaine, Minn., assignor to Thermo King Corp., Minneapolis, Minn.

Filed Apr. 29, 1980, Ser. No. 145,190
Int. Cl.[3] F25B *41/00, 29/00*
U.S. Cl. 62—196 A **12 Claims**



1. In a transport refrigeration system of the type having the capabilities of at least heating and cooling operations, and dual compressor speed operation, and having first relay means including switch means controlling heating and cooling operations, and second relay means including switch means controlling compressor speed operation, said first and second relay means being responsive to temperatures in the served space for controlling said system normally in at least four stages of operation in accordance with the differences in temperature of the served space from the setpoint temperature, two of said stages of operation including low speed compressor operation in the temperature band encompassing temperatures closely above and below said setpoint temperature, the improvement comprising:

auxiliary control relay means including switch means;

time delay means connected to control operation of said auxiliary control relay, said time delay means being connected to be controlled in a timed operation in accordance with the condition of said second relay following said first relay means having first operated to a heating condition position;

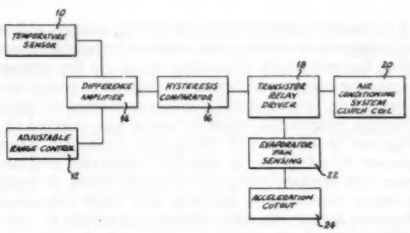
said auxiliary control relay being operative to maintain said compressor speed at a lower level until said time delay means operates to change the condition of said auxiliary control relay to thereby change said compressor speed to the higher level in accordance with said second relay calling uninterruptedly for a predetermined time period for compressor speed at a higher level.

4,325,225

ELECTRONIC TEMPERATURE CONTROL

David L. Price, II, Huntsville, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1980, Ser. No. 172,501
Int. Cl.[3] F25B *1/00, 49/00*
U.S. Cl. 62—229 **9 Claims**



1. In an air conditioning system for controlling the temperature in an enclosed space, including an evaporator, an evaporator fan, and an evaporator fan switch having at least an "on" position and an "off" position, an electronic temperature control comprising:

means for sensing and indicating the ambient temperature of the enclosed space;

adjustable means for indicating the range of temperature desired to be maintained in the enclosed space;

means for amplifying the difference between the indications from said sensing means and said adjustable means, the output of said amplifying means being at a greater voltage when the ambient temperature is lower than the desired temperature and at a lesser voltage when the ambient temperature is higher than the desired temperature;

a hysteresis compactor for comparing said output of said amplifying means to a predetermined voltage, switching its output to a lower level when said output of said amplifying means reaches a predetermined level above said predetermined voltage, and switching its output to a higher level when said output of said amplifying means reaches a predetermined level above said predetermined voltage, and switching its output to a higher level when said output of said amplifying means reaches a predetermined level below said predetermined voltage;

means for energizing the air conditioning system when said

output of said hysteresis comparator switches to said higher level, and for deenergizing the air conditioning system when said output switches to said lower level; and

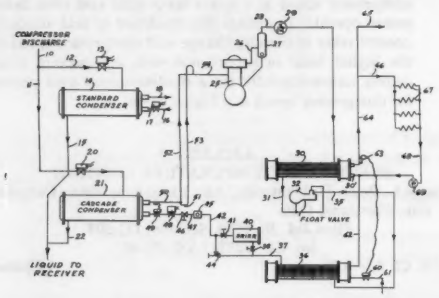
first disabling means for disabling said energizing means when the evaporator fan switch is in the "off" position, such that the air conditioning system cannot be energized when the fan is not operating.

4,325,226

REFRIGERATION SYSTEM CONDENSER HEAT RECOVERY AT HIGHER TEMPERATURE THAN NORMAL CONDENSING TEMPERATURE

Bruce S. Schaeffer, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed Feb. 18, 1981, Ser. No. 235,404
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—238.6 **4 Claims**



1. A medium heating system comprising, primary and auxiliary refrigeration systems, said auxiliary refrigeration system having first refrigerant condensing means and first refrigerant evaporating means, said primary refrigeration system having second refrigerant condensing means connected to said first refrigerant evaporating means whereby heat rejected by the refrigerant in said second refrigerant condensing means is absorbed by refrigerant in said first refrigerant evaporating means, said auxiliary refrigeration system having its condensing means connected by a line to feed liquid refrigerant to refrigerant liquid subcooling means, trap means in said line permitting liquid only to flow to said liquid subcooling means after condensation in said first refrigerant condensing means, whereby substantially only heat of condensation is given up in said first refrigerant condensing means, means for bringing medium to be heated, seriatim, into heat exchange relation with refrigerant in said liquid subcooling means, and then into heat exchange relation with refrigerant in said first refrigerant condensng means, whereby said medium is initially heated in said liquid subcooling means to a temperature below that prevailing in said first refrigerant condensing means, and then is further heated in said first refrigerant condensing means to a higher temperature approaching the condensing temperature in said first refrigerant condensing means.

4,325,227

ENERGY EFFICIENT GLASS DOOR MERCHANDIZER

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

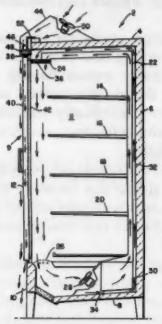
Continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, Pat. No. 4,245,482, Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882, Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, and Ser. No. 124,544, Feb. 25, 1980. This application May 1, 1980, Ser. No. 145,712
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—248 **18 Claims**

1. A glass door refrigerated display case comprising:

a cabinet having top, bottom, rear and front walls and an interior display space, with an access opening in said front wall for enabling access into said interior display space;

at least one glass door covering said access opening in said front wall, said door being movable into an open position for enabling access to products in said interior display space, said door having two glass members mounted within a frame with a space between said glass members;

a refrigeration air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening and said inlet opening being arranged so that air leaving said outlet opening will be directed toward and received by said inlet opening so as to form a refrigerated air curtain across said front opening along a path inside of said door;



refrigeration means including an evaporator coil arranged within said refrigeration air conduit for refrigerating air circulated through said refrigeration air conduit during a refrigeration cycle of operation;

first air circulating means for circulating air through said refrigeration air conduit; and,

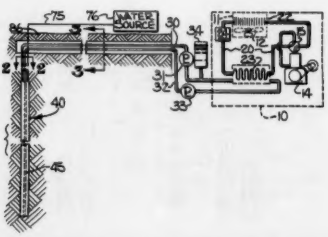
means for circulating ambient air through said glass door between said glass members, said means for circulating ambient air through said door includes an air conduit having an outlet opening arranged in alignment with said glass door for directing air between said glass members when said glass door is in a closed position and ambient air circulating means for drawing ambient air into said ambient air conduit and circulating ambient air through said ambient air conduit.

4,325,228

GEOTHERMAL HEATING AND COOLING SYSTEM

Herman B. Wolf, Rte. 1, Box 99-P, Pineville, N.C. 28134

Filed May 20, 1980, Ser. No. 151,583
Int. Cl.³ F28D *7/12*; F25D *23/12*
U.S. Cl. 62—260 **11 Claims**



1. In a geothermal system for conditioning air in an enclosed space by selective transfer of heat between such air and the subterranean water system of the earth including a heat pump

of the liquid-to-air type, an air circulation system for circulating air through said heat pump in heat exchange relationship with a refrigerant therein and for directing such air into the enclosed space, and a liquid circulating system for circulating a liquid through said heat pump in heat exchange relationship with said refrigerant, and a heat sink in heat exchange relationship with the subterranean water system of the earth and connected to said liquid circulating system, the improvement therein wherein said heat sink comprises

(a) an elongate, generally cylindrical liquid container of a material having high thermal conductivity, said container having a length of at least about forty times its diameter to provide a large amount of surface contact with the earth for the volume of liquid contained therein, said container being buried in the earth in a generally vertical orientation and at a depth providing a good heat transfer relationship with the subterranean water system of the earth, said container having an inlet conduit communicating with the interior of the container at the top thereof and an outlet conduit extending generally longitudinally of and within said container and communicating with the interior of said container adjacent the bottom thereof so that liquid enters at the top of said container, travels downwardly therein in heat transfer relationship with the thermally conductive material of the container and is withdrawn from the bottom portion of the container, means surrounding and thermally insulating said outlet conduit substantially throughout its length from the liquid in said container, and means for maintaining said outlet conduit substantially centered within said container and for stabilizing said outlet conduit therein, said centering and stabilizing means including a plurality of positioning devices spaced along said outlet conduit, said positioning devices extending between the interior of said container and said outlet conduit and permitting the liquid to travel downwardly around said outlet conduit,

(b) said liquid circulating system providing a temperature gradient of approximately 20 degrees F. between the liquid being withdrawn from said container and the subterranean water for maximizing the heat transfer rate between said heat sink and the subterranean water and also providing a predetermined liquid dwell time sufficient for at least about a 10 degree F. change in temperature of the liquid within said heat sink and a BTU per hour capacity rating of at least 20,000.

4,325,229

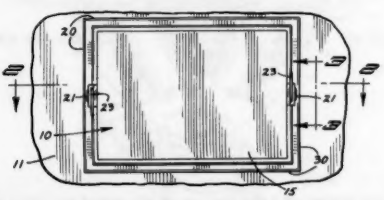
INTERIOR AIR CONDITIONER COVER

Ted E. DeZurik, 2141 East Kenwood Dr., St. Paul, Minn. 55117

Filed Apr. 7, 1980, Ser. No. 138,175

Int. Cl.³ F25D *23/12*; B65B *11/00*

U.S. Cl. 62—262 **4 Claims**



1. In combination with a through-the-wall air conditioner having a housing, said housing being mounted in an opening defined in a building wall, the improvement comprising a cover which overlies a portion of the air conditioner protruding through said wall to the interior of a room, said cover including a peripheral wall of slightly larger size than the opening, said peripheral wall having outer edges that lie generally along a plane corresponding to the plane of the wall through which the opening is defined, gasket means on the outer edges of said peripheral wall of said cover, said gasket means being compressible a substantial amount, and cooperating latch means on the cover and the interior of the room to latch said cover in position with the outer edges of said peripheral wall of said housing circumscribing the opening through the building wall, said latch means including means to provide a force urging the outer edges of the peripheral wall toward the building wall to compress said gasket to seal around the opening.

4,325,230

PLASTIC ICE CUBE

Mark Driscoll, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May 5, 1980, Ser. No. 146,467

Int. Cl.³ F25D *3/00, 3/08*

U.S. Cl. 62—293 **4 Claims**

1. A freezable object for cooling a beverage, comprising in combination, a hollow shell of transparent plastic material, an identifying disc therein and a quantity of water filling an interior of said shell, wherein said disc comprises a flat member made of transparent plastic material with an identifying character printed thereon, said disc being located between said shell and water when frozen.

4,325,231

CASCADE COOLING ARRANGEMENT

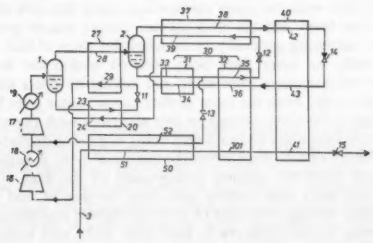
Heinrich Krieger, Leitlestrasse 16, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

Division of Ser. No. 23,089, Mar. 22, 1979, which is a continuation of Ser. No. 808,621, Jun. 21, 1977, abandoned. This application Jul. 31, 1980, Ser. No. 175,187

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2626007

Int. Cl.³ F25B *7/00*

U.S. Cl. 62—335 **2 Claims**



1. A cooling arrangement that comprises at least one cooling circuit wherein compressor means with cooling means operated by an ambient cooling fluid, expansion means and heat

exchanger means are included and the output of the compressor means is connected to the input of the expansion means and the output of the expansion means is connected via the heat exchanger means to the input of the compressor means, at least one cooling circuit being an incorporated cascade circuit wherein first phase separator means having a vapor-liquid input side for the vapor-liquid system to be separated into its liquid and vapor phases, a vapor discharge side and a liquid discharge side are further included and the output of the compressor means is connected via a first flow channel of a first portion of the heat exchanger means to the vapor-liquid input side of said first phase separator means, a second flow channel of said first portion of the heat exchanger means being connected to the input of the compressor means of one cooling circuit, and the liquid discharge side of said first phase separator means is connected via a first flow channel of a second portion of the heat exchanger means to the input of a first portion of the expansion means and the vapor discharge side of said first phase separator means is connected via a first flow channel of a third portion of the heat exchanger means to the input of a second portion of the expansion means and the outputs of said first and second portions respectively of the expansion means are connected essentially in parallelism via second flow channels of said third and second portions respectively of the heat exchanger means to the input of the compressor means, said second and third portions of the heat exchanger means being essentially thermally segregated from one another and in said second and third portions of the heat exchanger means said first and second flow channels being arranged in countercurrent heat-exchange relationship.

4,325,232

CONSTANT VELOCITY UNIVERSAL JOINT

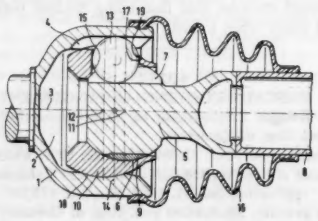
Sobhy L. Girguis, Troisdorf-Oberlar, Fed. Rep. of Germany, assignor to Uni-Cardan AG, Siegburg, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,369

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837301

Int. Cl.³ F16D 3/30

U.S. Cl. 64—21 **5 Claims**



1. Constant velocity universal joint, comprising a hollow outer joint body having an inner surface defining a hollow interior and with the inner surface encircling the axis of said outer joint body and the inner surface having spaced grooves therein extending generally in the axial direction of said outer joint body, an inner joint body located within the hollow interior of said outer joint body and having an outer surface speed inwardly from the inner surface of said outer joint body, said inner joint body having an axis alignable with the axis of said outer joint body and said axes being angularly displaceable one relative to the other when the universal joint is angularly displaced from the aligned arrangement of the axes of said outer and inner joint bodies, said outer surface of said inner joint body having a number of grooves therein corresponding in number to the grooves in said joint body and extending generally in the axial direction of said inner joint body, a plurality of balls located between said outer and inner joint bodies with each said ball positioned in one of said grooves in said outer joint body and in a corresponding groove in said inner joint body for transmitting torque between said outer and inner joint bodies, a cage located within said outer joint body and between the inner surface of said outer joint body and the outer surface of said inner joint body, said cage having window openings therethrough with each said ball located in one of said window openings between the corresponding grooves, the centers of said balls being located in a plane which bisects the angle between the axes of said outer and inner joint bodies when the axes are angularly displaced out of alignment, each of said windows having a pair of opposed boundary surfaces spaced from and disposed parallel to the plane containing the centers of said balls and said pair of opposed boundary surfaces comprising a first boundary surface and a second boundary surface, and said first boundary surface serving under torque load as a bearing surface for said ball wherein the improvement comprises that said first boundary surface has a bevelled face extending outwardly from said first boundary surface to said outer surface of said cage, the prolongation of said bevelled face intersecting the plane containing the centers of said balls at a location spaced inwardly from the center of said ball within said window containing said bevelled face, said cage having an outer surface in contact with the inner surface of said outer joint body and an inner surface in contact with the outer surface of said inner joint body, the outer surface and inner surface of said cage being spherically shaped and the center of the spherically shaped outer surface being located on one side of the plane of said balls and the center of the spherically shaped inner surface being located on the opposite side of the plane of said balls from the center of the outer surface so that said cage has a decreasing thickness in the axial direction of said outer and inner joint bodies in the direction extending from the second boundary surface toward the first boundary surface the bevelled face being located on the first boundary surface of said window adjacent the end of said cage having the least wall thickness and the second boundary surface has a greater thickness than the first boundary surface and extends outwardly to the outer surface of said cage.

4,325,233

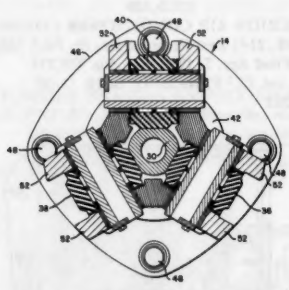
KELLY AND KELLY DRIVE BUSHING

Charles W. Haynes, Spring, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 13, 1979, Ser. No. 103,258

Int. Cl.³ F16D 3/00

U.S. Cl. 64—23.5 **15 Claims**

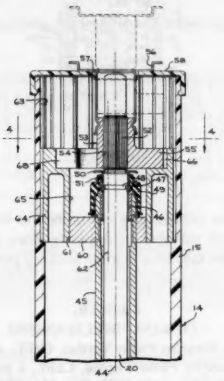


1. An improved kelly having an elongated six sided drive section with a longitudinally extending central axis of rotation, said drive section having a substantially uniform cross section along the length thereof, with the outer peripheral surface having three arcuately spaced continuous flat drive sides converging and alternating with three continuous arcuate sides, said arcuate sides being spaced a substantially equal radii from said central axis of said kelly, said flat drive sides each having a midpoint spaced substantially the same radial distance from said central axis which radial distance is less than the radius of said arcuate sides.

4,325,234
ADJUSTABLE STOKE AGITATION SYSTEM

Daniel N. Toma, Georgetown, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 14, 1980, Ser. No. 196,908
Int. Cl.³ D06F *13/02*
U.S. Cl. 68—133 7 Claims



1. In an automatic washing machine of the vertical axis type, an adjustable agitation system comprising:

input means oscillatable about a first, generally vertical, axis;

an agitator mounted for oscillation about a second, generally vertical, axis spaced from the first axis, and

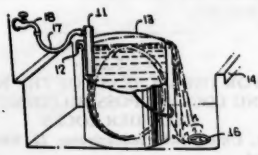
drive means interconnecting said agitator with said input means for oscillating said agitator about the second axis in response to oscillation of said input means about the first axis;

said drive means being manually adjustable to provide a selected one of a plurality of driving relationships between said input means and said agitator to produce oscillation of said agitator through a selected one of a plurality of oscillation arcs in response to oscillation of said input drive means through a predetermined arc.

4,325,235
WASHING APPARATUS

Peter Bauer, Germantown, and Julian Lazrus, Bethesda, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Division of Ser. No. 576,713, May 12, 1975, Pat. No. 4,227,550, which is a division of Ser. No. 356,416, May 2, 1973, abandoned. This application Apr. 3, 1980, Ser. No. 136,860
Int. Cl.³ D06F *7/00, 39/06*
U.S. Cl. 68—3 SS 26 Claims



1. A clothes washer comprising:

a container defined by a substantially vertical surface generated about the periphery of the container suitable for containing a predetermined volume of wash liquid, said container having an upper edge permitting overflow from the surface of said volume of liquid upon addition of liquid to said container in excess of said predetermined volume;

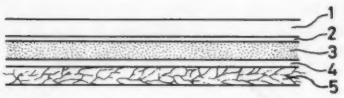
pulsing means for delivering wash liquid pulses into said container; and

mounting means for securing said pulsing means in a predetermined position relative to said container to deliver said liquid pulses into said container such that the pulses are oriented to induce and maintain a re-circulating liquid flow in a vertical plane in said container and such that the delivery of wash liquid provides overflow from the surface of said volume of wash liquid.

4,325,236
PROCESS FOR MANUFACTURING REGENERATED LEATHER

Yu-Ming Tsui, No. 34-3, 31 Alley, 59 La., Sec. 5 Nanking East Rd., Taipei, Taiwan

Filed Feb. 11, 1980, Ser. No. 120,505
Int. Cl.³ C14B *1/00*
U.S. Cl. 69—21 5 Claims

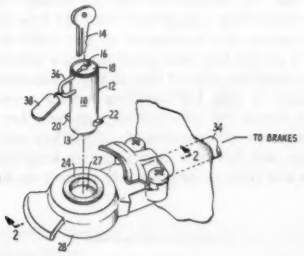


1. A process for manufacturing regenerated leather characterized by preparing a short-fiber and a long-fiber leather pulps from wasted natural leather; sending the two kinds of pulp separately to a refrigerator for freezing and then drying in a vacuum dryer, thus form two sheets of cake-like leather; combining the two sheets to one and dipping with proper bonding agent; fluffing the long-fiber leather sheet by a fluff-forming machine thus to form a regenerated natural leather.

4,325,237
LOCK PLUG FOR GLAD HAND BRAKE LINE COUPLER

Larry L. Menzie, Antioch, Calif., assignor to James G. O'Neill, Walnut Creek, Calif.

Filed Sep. 8, 1980, Ser. No. 185,217
Int. Cl.³ B60R *25/00;* E05B *65/12*
U.S. Cl. 70—14 5 Claims



1. In combination with a glad hand brake line coupler, a lock plug for insertion into and locking in place in a passage opening formed in said brake line coupler, said lock plug comprising a hollow cylindrical body having a base formed integrally with said body at one end thereof and a moveable locking member rotatably held in said body at the other end thereof; a plurality of locking fingers connected to said moveable locking member and extendable from and retractable into said body, and operating means insertable into an opening formed in said moveable locking member whereby the turning of said operating means from a first position to a second position will rotate said move-

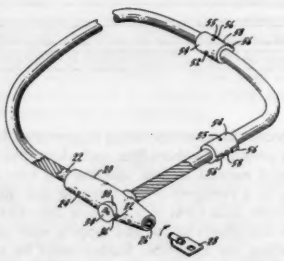
able locking member to retract said locking fingers into said hollow body to allow said lock plug to be inserted into said passage opening with the base thereof pressed against an interior wall of said coupler, and the turning of said operating means back from said second position to said first position will rotate said moveable locking member to thereby extend said locking fingers from said hollow body to thereby hold said lock plug within said brake line coupler by the abutment of said fingers against an interior wall of said fitting opposite said interior wall against which said base is pressed.

4,325,238

CABLE LOCK

Frank J. Scherbing, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Filed Jun. 16, 1980, Ser. No. 159,803
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—18 **4 Claims**



1. A cable lock, comprising an elongated lock body, said body being secured to one end of a flexible cable, said lock body including a key actuated lock mechanism, a transverse cable receiving bore passing completely through said body, said lock mechanism carrying a first securement means rotatable by actuation of a proper key and in communication with the transverse cable receiving bore, the opposite end of the cable having a lug engagement member connected thereto and adapted to be moved into and through the transverse bore of said body, said lug engagement member having cooperating means for interlocking engagement with the lock mechanism securement means for securement to the cable body upon rotation of a proper key, said cable having a plurality of lug engagement members secured thereto at predetermined spaced intervals, each of said lug members having corresponding engagement means for interlocking with said key actuated engagement means upon rotation of a proper key, and said bore and said lugs each having a corresponding longitudinally extending key and keyway for positively guiding the lugs in said bore.

4,325,239

KEY SAFE HAVING IMPROVED BAR LOCKING SYSTEM

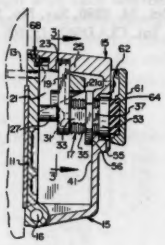
Wayne F. Larson, Salem, Oreg., assignor to Supra Products, Inc., Salem, Oreg.

Filed Jan. 17, 1980, Ser. No. 112,867
Int. Cl.³ E05B *65/06*; E05C *3/02*
U.S. Cl. 70—139 **8 Claims**

1. In a lock device,

a first member and a second member to be locked together,

a lock including an arm on one member movable to and from a locking position with respect to a retaining means on the other member,



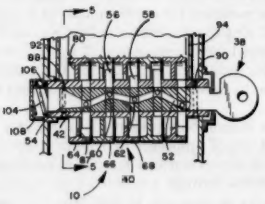
and means for establishing a connection between said arm and said one member at opposite sides of said retaining means when said arm is in its locking position.

4,325,240

LOCKING MECHANISM

Derek J. Gable, Rancho Palos Verdes, Calif., assignor to Denis V. Bosley, Rancho Palos Verdes, Calif., a part interest

Filed Sep. 17, 1979, Ser. No. 76,326
Int. Cl.³ E05B *37/00*
U.S. Cl. 70—284 **24 Claims**



1. A locking mechanism comprising:

a tumbler;

means for moving said tumbler to one of a plurality of predetermined positions;

a web;

a plurality of cooperative means in said web each for cooperating with said tumbler, each one of said cooperative means within said web being positionable to receive said tumbler when said tumbler is correctly positioned by said tumbler moving means;

means for controlling the position of said web because positioning of both said cooperative means on said web and said tumbler is necessary for said tumbler to be received by said cooperative means so that said locking mechanism can be unlocked.

4,325,241

SYSTEM FOR THE INCREASE OF THE NUMBER OF DIFFERING LOCKING POSSIBILITIES IN ROTARY CYLINDER LOCKS

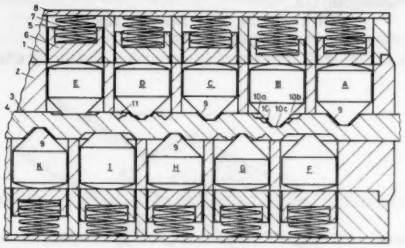
Ernst Keller, Untere Schwandenstrasse 22, 8805 Richterswil, Switzerland

Filed Jul. 21, 1980, Ser. No. 171,233
Claims priority, application Switzerland, Apr. 24, 1979, 3851/79
Int. Cl.³ E05B *27/04*
U.S. Cl. 70—358 **6 Claims**

1. In a rotary cylinder lock comprising a cylinder housing, a cylinder core disposed therein and having a key channel, and a

plurality of spring-loaded, two-piece tumbler pins disposed in bores running radially through the cylinder core and the cylinder housing and which can be positioned by a flat key in the key channel to permit free movement of the cylinder core and positions the correct alignment of rows of the tumbler pins by means of recesses in side surfaces of the key, the improvement comprising

means for increasing the number of differing locking possi-



bilities comprising variably shaped heads on the tip ends of said tumbler pins, and wherein at least one of the recesses of the key has two or more differing control surfaces for the head of the accompanying tumbler pin, and the heads of the respective tumbler pins in the several locks are disposed in such a manner that the heads are only arranged in the correct alignment when the heads interact with either one, several or all control surfaces at the same time.

4,325,242

MULTI-LEVEL LOCK SYSTEM AND METHOD

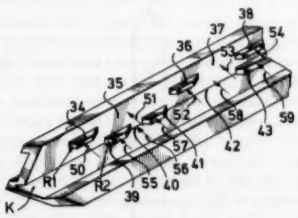
Werner Tietz, Berlin, Fed. Rep. of Germany, assignor to ZEISS IKON AG Goerzwerk, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 940,787, Sep. 8, 1978, Pat. No. 4,221,121. This application Mar. 19, 1980, Ser. No. 131,810

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738313

Int. Cl.³ E05B *19/02*

U.S. Cl. 70—401 **9 Claims**



1. In a key for use in a hierarchal lock system with an elongated body having selectively spaced notches cut on an elongated edge thereof, an improvement comprising:

a first plurality of discontinuous rib members selectively arranged and affixed to a side of the body wherein higher order keys in the hierarchy have more discontinuous rib members than do lower order keys.

4,325,243

KEY HOLDER

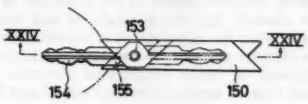
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 22, 1979, Ser. No. 68,568

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **21 Claims**



1. A tie pin type key holder within which a tie can be inserted comprising:

a body;

a key pivotably mounted on said body at one end portion of said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said body;

said key further comprising an end hook portion extending therefrom and engageable for moving said key from said non-operating position to said operating position, said end hook portion projecting outwardly from said body;

a guide member formed at an end portion of said body opposite said one end portion of said body for guiding said tie upon insertion within said key holder; and

biasing means having one end connected to said body for maintaining said key at the non-operating position thereof and having a free end opposite said one end of said biasing means for allowing insertion of said tie within said key holder.

4,325,244

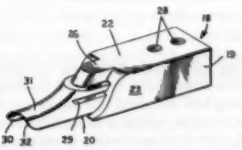
SELF-REPAIRING WIPER DIE

Robert L. Stowe, 6696 Carriage Dr., Mableton, Ga. 30059, and Wilbur B. Taylor, 3499 Chestnut Dr., Doraville, Ga. 30340

Filed Sep. 2, 1980, Ser. No. 183,420

Int. Cl.³ B21D *7/04*

U.S. Cl. 72—158 **6 Claims**



1. A wiper-die assembly for mounting on a tube bending machine comprising:

a metallic base means having an outer bottom surface and configured to define a longitudinal U-shaped channel by a pair of channel sidewalls and a channel floor, said channel extending completely through the longitudinal length of said base means;

a longitudinally extending metallic insert means having an upper, lower, and pair of sidewall surfaces, said lower and sidewall surfaces of the insert means configured to slideably engage longitudinally with the sidewalls and floor of said base means channel when the insert means is located in the channel;

the upper surface of said insert means configured to form a

semi-circular longitudinal channel therealong with said channel having a diametric value of no greater than the width of the base means channel;

the longitudinal length of said upper surface of said insert means being greater than that of the insert means lower and sidewall surfaces such that one end of the insert means is configured to provide a curvatured transition section that extends from the insert means lower and sidewall surfaces to termination in a sharp feather-edge substantially tangent to the semi-circular channel in the insert means upper surface;

cooperative retention means in the sidewalls of said base means channel and the sidewalls of said insert means whereby when the insert means is located within the base means channel, the insert means may be selectively slid in the channel in either longitudinal direction while restrained from an upward direction out of said first means channel;

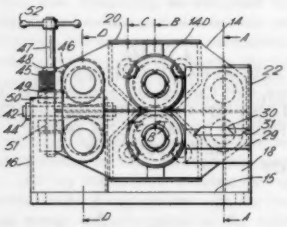
and, a metallic adjusting means for making a relative longitudinal movement between the base means and the insert means, said adjusting means comprising an axially extending rotatable member having a threaded portion thereon nesting in a longitudinal semi-circular cutout in the channel floor surface of said base means with the threaded portion engaging a longitudinal semi-circular and threaded cutout in the lower surface of the insert means whereupon the insert means may be moved in either direction longitudinally in the base means channel upon selective rotation of said rotatable member.

4,325,245

ROLLING MILL STAND

William L. Sherwood, 6968 Ash St., Vancouver, British Columbia, Canada

Filed Mar. 13, 1980, Ser. No. 130,063
Int. Cl.³ B21B *31/24*
U.S. Cl. 72—248 **4 Claims**



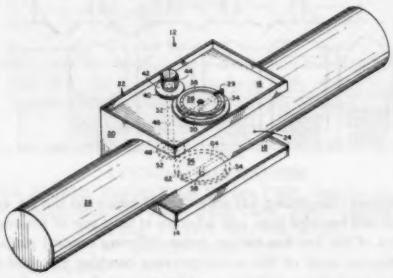
1. In a rolling mill stand employing cantilevered work rolls, the combination comprising a top roll housing box and a bottom roll housing box mounted one above the other, a roll shaft supported for rotation within a main load bearing mounted in the back wall, said shaft projecting from the housing box front wall and carrying a work roll ring mounted on the projecting shaft end; at least one pair of parting adjustment shaft members, a top shaft in the top bearing box, and a bottom shaft in the bottom bearing box, with axes oriented horizontally, parallel and in a plane substantially at right angles to the pass line on which are fixed external circular eccentric bushings for rotation with the shafts and within bearing surfaces in said front and back walls of said housing boxes; at least one spacer member connecting between said top and bottom shafts adapted for maintaining fixed spacing between the shafts while allowing for shaft and bushing rotation; a fixed support for maintaining a constant vertical position of said spacer member; a sliding guide integral with said fixed support allowing horizontal movement of the said spacer member and thereby of said shafts in the rolling pass-line direction; rotation means for rotating the top parting shaft and bottom parting shaft simultaneously in opposite directions, for substantial equal angular distances, thereby adjusting the spacing between the top and bottom housing boxes according to the amount and direction of eccentricity of said circular bushings.

4,325,246

COMPASS CHECKER

Gordon R. Cooke, Poway, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,601
Int. Cl.³ G01C *25/00*
U.S. Cl. 73—1 E **12 Claims**



1. A device for generating a rotatable magnetic field comprising:

a housing having first and second walls and a channel therebetween;

a first magnetic means secured to said first wall for generating a first magnetic field in the area of said channel; and

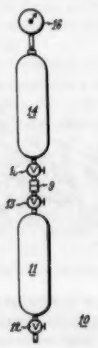
a second magnetic means secured to said second wall for generating a second magnetic field in the area of said channel.

4,325,247

METHOD FOR DETERMINING GASEOUS CONTAMINANTS IN VAPOR COOLED TRANSFORMERS

Stephen D. Foss, Pittsfield, Mass., assignor to General Electric Company

Filed Jul. 14, 1980, Ser. No. 168,062
Int. Cl.³ G01N *7/14*
U.S. Cl. 73—19 **5 Claims**



1. A method for determining the concentration of dissolved gas in condensable power transformer coolants comprising the steps of:

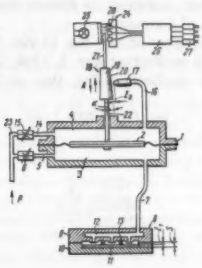
providing container means in fluid coupled relation with a power transformer tank;
evacuating the container means;
admitting a sample of condensable coolant from the transformer tank to completely fill the container means;
closing the container means to allow the coolant and any noncondensable gas dissolved therein to achieve a state of thermal equilibrium within the container means;
measuring the total pressure within the container means; and
measuring the temperature of the sample in its state of thermal equilibrium;
whereby the concentration of dissolved noncondensable gas in the sample is determined by Henry's Law.

4,325,248

DEVICE FOR MEASURING THICKNESS OF STORAGE CELL PLATES IN SORTING

Ivan A. Kolosov, 1 Ogorodny tupik, 15, kv. 104, Saratov, U.S.S.R.

PCT No. PCT/SU79/00065, § 371 Date Jun. 25, 1980, § 102(e) Date May 22, 1980, PCT Pub. No. WO80/00874, PCT Pub. Date May 1, 1980
PCT Filed Aug. 14, 1979, Ser. No. 194,456
Claims priority, application U.S.S.R., Oct. 25, 1978, 2678132
Int. Cl.³ G01B *13/06*
U.S. Cl. 73—37.5 **3 Claims**



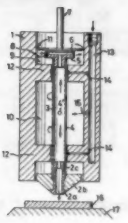
1. A device for measuring thickness of storage cell plates in sorting, comprising a hollow case divided by a movable diaphragm into a measuring chamber and a counterpressure chamber, said measuring chamber having an inlet duct with an air flow restrictor and an outlet duct connected with a sensing element provided with a space for accommodating a storage cell plate to be measured and further provided with a measuring nozzle facing toward said space, said counterpressure chamber having an inlet duct with an air flow restrictor and an outlet duct with a counterpressure nozzle the air flow resistance of which is governed by the movement of a transmitting element having an adjustable transmission ratio, rigidly connected to the movable diaphragm and adapted to actuate a transmitting element travel indicator, characterized in that the indicator of the travel of the transmitting element (18) is constructed as a multirange photorelay (24) designed for sorting storage cell plates (11) being measured, and the transmitting element (18) includes a wedge (19) to which is rigidly attached a blind (21) designed to act upon the multirange photorelay (24), said wedge (19) having provision for varying the angle of the working surface (20) thereof in relation to the counterpressure nozzle (17) for the purpose of adjusting the transmission ratio of the transmitting element (18) and varying the travel of the blind (21) with respect to the photorelay (24).

4,325,249

SELF-STABILIZING PNEUMATIC POSITION SENSOR

Per R. Berglund, Musserongatan 18, S-13534 Tyresö, Sweden

Filed Jan. 29, 1980, Ser. No. 116,646
Claims priority, application Sweden, Jan. 30, 1979, 7900795
Int. Cl.³ G01B *13/06*
U.S. Cl. 73—37.6 **11 Claims**



1. Pneumatic position indicator for measuring position by blowing a compressed gas against a surface to be sensed, the indicator comprising:
means defining a closed chamber for being filled with compressed gas;
a hollow, axially movable measuring means extending through the chamber; a compressed gas entrance hole into the measuring means and positioned on the measuring means to be within the chamber;
a nozzle aimed for directing gas against a surface to be sensed, the nozzle communicating with the measuring means and being located outside the chamber at one side of the chamber;
the measuring means having an exit opening that is located outside of the chamber at the other side of the chamber from the nozzle;
an additional member attached to the measuring means and being movable together with the measuring means, the additional member being located on the side of the exit opening of the measuring means that is away from the chamber, and the additional member being shaped for having pressure applied thereto in view of the compressed gas flowing through the exit opening; means defining a gas leakage pathway located past the additional member for throttling the flow of gas from the exit opening past the additional member;
whereby the moving means is acted upon to shift axially with respect to the chamber by a combination of gravity, the gas exiting through the nozzle, and the gas exiting through the exit opening applying pressure against the additional member and then exiting through the leakage pathway.

4,325,250

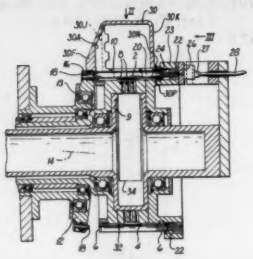
CIGARETTE TESTING DEVICE

Reginald C. Bolt; John G. Dowding, and Robert E. Williams, all of London, England, assignors to Molins Limited, London, England

Filed Apr. 30, 1980, Ser. No. 145,231
Claims priority, application United Kingdom, May 2, 1979, 15325/79
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **23 Claims**

1. A device for testing filter cigarettes, comprising a drum or equivalent means for conveying cigarettes in succession through a test station at which each cigarette in turn is tested with the aid of a pressure chamber surrounding the wrapper of the cigarette, and a pressure detector connected to the filter end of the cigarette while the tobacco end of the cigarette is

open to atmosphere, and including means for measuring the pressure in the pressure chamber and means for comparing that



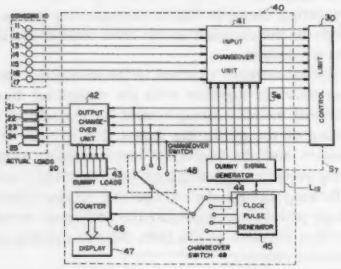
pressure with the pressure detected at the filter end of the cigarette.

4,325,251

APPARATUS FOR TESTING A CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 23, 1980, Ser. No. 162,091
Claims priority, application Japan, Jun. 28, 1979, 54-80722
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **11 Claims**



1. An apparatus for testing a system which controls various devices mounted on an automotive vehicle, said system including a plurality of sensors for sensing various operational conditions of the automotive vehicle to output signals representing the operational conditions, a control unit responsive to the signals from said plurality of sensors to output various control signals, and a plurality of actuators responsive to the control signals to control corresponding devices, said apparatus comprising:

a dummy signal generator for producing a plurality of dummy signals corresponding to the signals from said plurality of sensors;

a plurality of dummy loads substantially electrically equivalent to said plurality of actuators;

an input changeover means for selectively connecting each of either the signals from said sensors or the dummy signals to said control unit;

an output changeover means for selectively connecting each of either said plurality of actuators or said dummy loads to said control unit; and

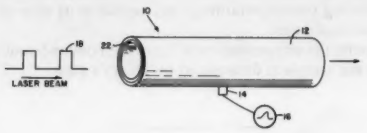
means for measuring the control signals from said control unit.

4,325,252

POWER MEASURING DEVICE FOR PULSED LASERS

Thomas G. Miller, Madison, and Billie O. Rogers, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,347
Int. Cl.³ G01K *17/00*; G01J *3/42*
U.S. Cl. 73—190 EW **5 Claims**



1. Apparatus for measuring the power of a laser beam without blocking the beam comprising:

(a) an open ended tubular member having an expandible fluid therein;

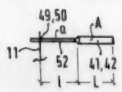
(b) measuring means for indicating the magnitude of pressure in said tubular member responsive to expansion of said fluid by heat from a laser beam passed through the length of said tubular member and through said fluid.

4,325,253

APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

Peter Romann, Stuttgart, and Udo Hafner, Lorch, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 15,994, Feb. 28, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,659
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809455
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **2 Claims**



1. In an apparatus for measuring the mass of a flowing medium, such as the intake air mass to an internal combustion engine, comprising:

a probe ring through which the medium to be measured flows;

at least one temperature-dependent resistor through which a current flows; and

a plurality of support elements mounted to the probe ring for mounting the resistor to the probe ring such that it is exposed to the flowing medium, wherein:

(i) the resistor is embodied as a hot wire, a parameter of which is controlled in dependence on the mass of the flowing medium, the extent to which the parameter is controlled being a measure of the mass of the flowing medium; and

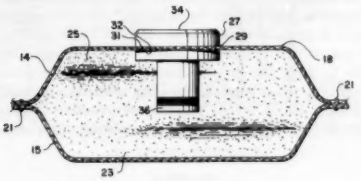
(ii) at least one of said support elements is embodied as an elongated element having a longitudinal axis, which is improved with respect to its capacity to minimize the conduction of heat resulting from a current flowing through the resistor, each improved support element having a variable cross section along its longitudinal axis, including a contact area defining a securing portion at the minimum cross section to which the hot wire resistor is attached, further wherein each said improved support element includes two areas of different constant

cross section, with the area of smaller constant cross section being cylindrical and comprising the contact area.

4,325,254
TEMPERATURE INDICATIVE HOTPACK

Lawrence M. Svacina, Denver, and Donald N. James, Estes Park, both of Colo., assignors to Staodynamics, Inc., Longmont, Colo.

Filed Jan. 29, 1980, Ser. No. 116,373
Int. Cl.³ G01K *1/14, 11/12*
U.S. Cl. 73—356 **11 Claims**



1. A temperature indicative hotpack for applying moist heat to a body, said hotpack comprising:

a liquid permeable cover having an enclosed space therein;

a heat retaining material within said enclosed space formed by said liquid permeable cover, said material being capable of absorbing hot liquid to heat the same, and said cover being of a material to retain said heat retaining material when said cover is both dry and wet;

at least one temperature monitor having a collar portion for securing said monitor to said liquid permeable cover with said monitor being retained on said cover when said cover is both wet and dry, said temperature monitor having an elongated temperature sensing portion within said enclosed space formed by said liquid permeable cover and in thermal contact with said heat retaining material therein, and said temperature monitor also having an indicating portion responsive to the temperature of said heat retaining material sensed by said sensing portion, said indicating portion including visually discernable indicia at least a portion of which assumes one state when the temperature of said heat retaining material is below a predetermined temperature to indicate a not sufficiently heated condition, and a second state when the temperature of said heat retaining material is above said predetermined temperature to indicate a sufficiently heated condition.

4,325,255
ULTRASONIC APPARATUS AND METHOD FOR MEASURING THE CHARACTERISTICS OF MATERIALS

Paul L. Howard; William B. Tarpley, Jr., both of West Chester; George R. Moulder, Coatesville, and William R. McBride, Glenmore, all of Pa., assignors to Energy and Minerals Research Co., Exton, Pa.

Filed Apr. 7, 1980, Ser. No. 137,879
Int. Cl.³ G01N *29/00;* G01F *23/28*
U.S. Cl. 73—589 **10 Claims**

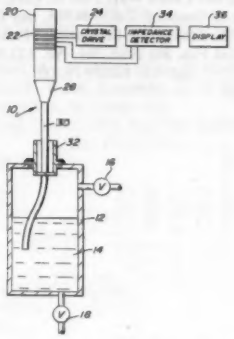
1. Ultrasonic apparatus for measuring the characteristics of a material by sensing impedance to the ultrasonic energy driving a probe, comprising:

a transducer including means whose electrical output varies with dimensional changes and whose dimensions vary with an applied electrical signal;

said transducer being acoustically connected to a probe, said probe being adapted for insertion into a material whose characteristics are to be measured;

means for sensing the ultrasonic acoustic energy in said probe and determining the equivalent impedance;

said sensing means being in series mechanically with said transducer and including a closed loop servo control drive

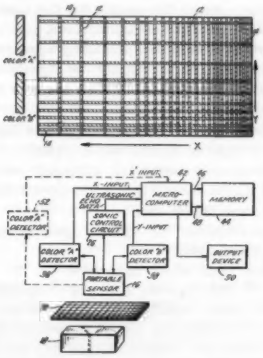


and means for operating said drive in the continuous wave, burst or pulse mode.

4,325,256
OPTICAL BICHROMATIC POSITION FINDER

Michael Horn, Sound Beach, N.Y., assignor to Optsonic Research Associates, Ltd., New York, N.Y.

Division of Ser. No. 102,241, Dec. 10, 1979, Pat. No. 4,275,596.
This application Dec. 15, 1980, Ser. No. 216,567
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—607 **7 Claims**



1. An ultrasonic scanning system, comprising:

bichromatic screen means having one surface colored with first and second colors, the intensity of said first color varying in a selected manner along a first direction on said surface, and the intensity of said second color varying in a second selected manner along a second direction on said surface oblique to said first direction;

portable ultrasonic transducer means movable with respect to said screen means;

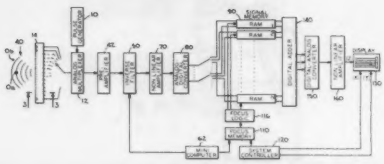
means for causing said transducer means to repeatedly transmit ultrasonic signals through said screen means and to receive ultrasonic signals reflected off an object being scanned and located behind said screen means with respect to said transducer means; and

detector means for measuring the respective intensities of said first and second colors at a point on said colored surface of said screen means corresponding to the lateral position of said ultrasonic transducer means with respect to said screen means.

4,325,257
REAL-TIME DIGITAL, SYNTHETIC-FOCUS, ACOUSTIC IMAGING SYSTEM

Gordon S. Kino, 867 Cedro Way; Paul D. Corl, 53-D Escondido Village, both of Stanford, Calif. 94305, and Peter M. Grant, #9 Grange Rd., Edinburgh, Scotland (EH9 1U.Q.)

Filed Feb. 20, 1980, Ser. No. 122,880
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—626 4 Claims



1. A real-time digital, synthetic-focus acoustic imaging system which comprises:
an array of electro-acoustic transducers,
a source of pulses,
means arranged to selectively deliver pulses in sequence from said source to said transducers,
means arranged to receive reflected signals in sequence from said transducers,
an analog-to-digital converter for receiving and digitizing all signals from all of said transducers is sequence,
digital memory means for receiving and storing the digitized signals from said analog-to-digital converter,
focus memory means for equalizing the time delay of the digitized signals from all transducers,
a single nonlinear amplifier providing square root compression gain arranged to amplify the signals received from each of said transducers before delivery to said analog-to-digital converter,
means for adding all of said time-equalized digital signals to provide a summed digital output signal,
a digital-to-analog converter arranged to receive said summed digital output signal to convert the same to an analog output signal, and
a nonlinear amplifier for squared gain expansion of said output analog signal.

2. An inverse filter which comprises:
a plurality of shift registers arranged to operate as a tapped delay line when digital signals are received,
a plurality of multiplying digital-to-analog converters connected to said shift registers to multiply the digital signals by tap weight reference voltages to produce an analog current output, and
means for delivering said reference voltages to said digital-to-analog converters including a plurality of latching digital-to-analog converters, and
means for programming said latching digital-to-analog converters in accordance with the desired frequency response in accord with the Wiener solution

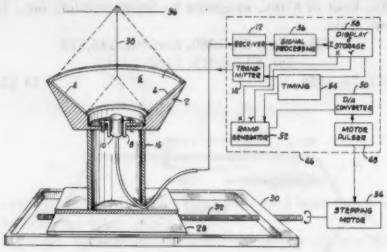
$$H(\omega) = \frac{D(\omega)X^*(\omega)}{X(\omega)X^*(\omega) + N^2(\omega)}$$

where
$X(\omega)$ is the input signal,
$X^*(\omega)$ is the complex conjugate of $X(\omega)$,
$N^2(\omega)$ is the noise power, and
$D(\omega)$ is the desired output signal, and
means for summing the output currents and converting to a single output voltage signal.

4,325,258
CONICAL TRANSDUCER ULTRASONIC SCANNING

Francis S. Foster, Toronto, Canada, assignor to Ontario Cancer Institute, Toronto, Canada

Filed Apr. 23, 1980, Ser. No. 142,973
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—642 15 Claims

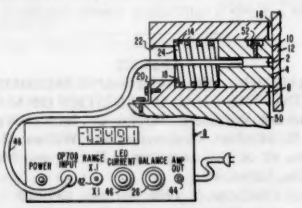


1. An ultrasonic imaging device, comprising transducer means for transmitting ultrasound pulses into a portion of a structure to be imaged and receiving ultrasound scattered by said structure portion and generating signals in response thereto, means to energize said transducer means to transmit said pulses, scanning means for progressively relating said transducer means to successive portions of said structure according to a scanning pattern, and receiver and signal processing means for assembling an image from said generated signals, wherein the transducer means comprises separate transmitting and receiving transducers, one of said transducers being one of a real or simulated conical transducer having a line focus, and the other of said transducers having its axis in parallel alignment with said line focus, the scanning means being operative to move said line focus in relation to a structure to be imaged in accordance with said scanning pattern.

4,325,259
VIBRATION AMPLITUDE MEASURING DEVICE

Lothar E. Willertz, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1980, Ser. No. 194,719
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—653 5 Claims



1. A device for the measurement of vibration amplitude and frequency comprising:
sensor means having a probative surface for monitoring variations in the position of a target surface relative to a point located a predetermined distance from the probative surface and having means for generating an output indicative of the target surface position,
means for interpreting and indicating the output of said sensor means,
a sensor housing having a front face for contacting the target surface,

means for supporting said sensor means within said sensor housing so that the probative surface of said sensor means is positioned said predetermined distance from the front face of said sensor housing, providing a path for communication between the probative surface of said sensor means and the target surface,

a base housing having a front face having an opening therein,

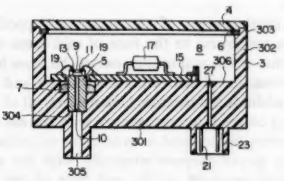
means for supporting said sensor housing within said base housing so that said sensor housing is permitted to slide along an axis within said base housing, defining a path of travel communicating with the opening in the front face of said base housing,

and biasing means within said base housing to bias said sensor housing along the path of travel against the target surface with the front face of said sensor housing protruding from the front face of said base housing so that when the target surface is caused to vibrate, said sensor housing remains substantially stationary at one peak of vibration, tracking thermally induced changes in the position of one peak of vibration, while said sensor means detects variations in the position of the target surface due to vibration.

4,325,260
PRESSURE TRANSDUCER

Minoru Takahashi; Hitoshi Minorikawa; Masaru Iguchi, and Seiichi Kashiwazaki, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1980, Ser. No. 117,078
Claims priority, application Japan, Feb. 5, 1979, 54-11449
Int. Cl.³ G01L *9/04*
U.S. Cl. 73—726 **6 Claims**



3. A pressure transducer for automobiles comprising:

a casing having a bottom portion and a side wall extending from the one side of said bottom portion and forming an open end of said side wall;

means for closing said open end airtightly thereby to provide a closed chamber;

means provided in said bottom portion of said casing for receiving pressure to be detected and converting the pressure into electric signals;

means disposed in said closed chamber for amplifying electric signals;

terminals electrically connected to said amplifying means and partially inserted in said bottom portion of said casing so that one end of said terminals is disposed out of said closed chamber;

means with air passage formed in said bottom portion about the positions of said terminals for preventing water from penetrating into said chamber, said means with air passage communicating with the atmosphere;

wherein said means with air passage includes a projection projecting from said bottom portion of said casing so as to surround said terminals and said air passage, further including

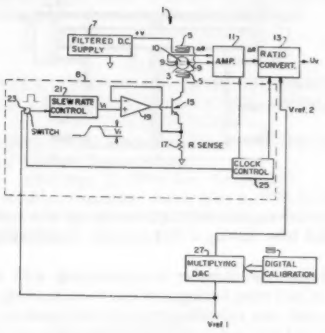
a plug having therein outer terminals and lead wires electrically connected to said outer terminals, and inserted in said projection so that said terminals contact with said outer terminals,

wherein said air passage comprises an air hole made in said bottom portion of said casing, a space defined by said wall, gaps between said wall and said plug and gaps between said terminals and said outer terminals.

4,325,261
PULSED DC CONSTANT CURRENT MAGNETIC FLOWMETER

William R. Freund, Jr., Hatfield; John C. Grebe, Jr., Norristown, and Paul K. Kuhn, Lansdale, all of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,890
Int. Cl.³ G01F *01/58*
U.S. Cl. 73—861.12 **7 Claims**



1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, coil means for generating a magnetic field in said fluid flowing through said body, means for producing an output voltage dependent on the electric field generated in said fluid flowing through said magnetic field, and signal processing means for converting said output voltage to an output signal, the improvement comprising a reference voltage source, pulse forming means operatively connected to said coil means for producing pulses of filtered direct current through said coil means, said pulse forming means including means operatively connected to said reference voltage source and responsive to said reference voltage source for controlling the current of said pulses and hence for controlling the magnetic field produced by said coil means, and means operatively connected to said reference voltage source for generating a second reference voltage dependent on said first reference voltage, said second reference voltage being operatively connected to said signal processing means, said signal processing means including ratioing means responsive to said output voltage and to said second reference voltage for making said output signal dependent on said second reference voltage, whereby changes in said output voltage caused by changes in said reference voltage are compensated in said output circuit by changes in said second reference voltage, and said output signal is made substantially independent of fluctuations in said reference voltage.

4,325,262
APPARATUS FOR MEASURING LIQUID FLOW

Claudio Meisser, Allenwinden; Hans Strasser, Baar, and Hubert Lechner, Cham, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jun. 4, 1980, Ser. No. 156,334
Claims priority, application Switzerland, Jun. 8, 1979, 5343/79
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **16 Claims**

1. An apparatus for ultrasonically determining fluid flow passing through a measurement section,

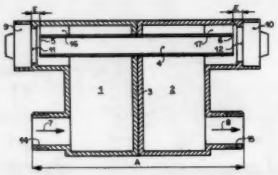
comprising in combination:

a tube having two ends, and an average predetermined inner cross-sectional area, constituting said measurement section,

a sound-emitting transducer disposed near one end of said tube, having a first sound-transfer surface,

a sound-receiving transducer disposed near the other end of said tube, having a second sound transfer surface,

each sound transfer surface being disposed at a sufficiently large predetermined distance from a corresponding end of said tube so as to permit said fluid flowing through said tube,



a fluid-receiving chamber communicating with said one end of said tube, having a first average cross-sectional area, and

a fluid-discharge chamber communicating with the other end of said tube, having a second average cross-sectional area, said tube extending through said chambers,

each of said first and second cross-sectional areas exceeding the inner cross-sectional area by a factor of at least two,

at least one of said chambers surrounding a corresponding end of said tube along at least a longitudinal portion of said tube exceeding the average inner width thereof.

4,325,263

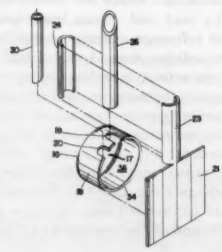
METAL SAMPLING APPARATUS

Frederick W. Gaines, Jr., and Ethel M. Gaines, both of 37451 Hunters Ridge Rd., Solon, Ohio 44139

Filed Mar. 31, 1980, Ser. No. 135,649

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—864.55 **9 Claims**



1. Apparatus for collecting a sample of a molten metal including in combination a mold member having an end wall and an annularly extending sidewall extending therefrom and terminating in an edge which edge is located substantially in a single plane, a substantially flat closure plate member engaging said edge of said annularly extending sidewall and in combination with said mold member defining a mold cavity, wall means in said sidewall forming an opening to said mold cavity, inlet conduit means communicating with said opening to said mold cavity, and spring clamping means holding said mold member and said flat closure plate in position relative to each other.

4,325,264

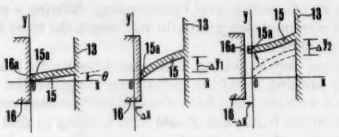
SUPERSONIC VIBRATION DRIVEN MOTOR DEVICE

Toshiiku Sashida, 1-8, Kasuya 2-chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,309

Int. Cl.³ F16H *27/02, 29/02*

U.S. Cl. 74—88 **9 Claims**



1. A supersonic vibration driven motor device comprising:

a supersonic oscillator; and

a mass to be rotationally driven by way of supersonic vibration,

said supersonic oscillator being provided with a vibration disc secured thereto on an end face thereof which is opposite to said mass to be driven;

said mass to be driven being integrally formed with a plurality of plate-shaped resilient vibratory pieces annularly arranged on an end face thereof opposite to said oscillator and axially extending at a predetermined angle of inclination relative to the axis of the mass to be rotated,

said vibration disc and vibratory pieces being located so that their respective end portions come in contact with one another,

vibratory displacement of the supersonic oscillator, in a direction transverse to the face of said mass being transformed into rotational movement of the mass by the flexible deformation of said vibratory pieces, and further including additional supersonic oscillators, all of the oscillators being coupled to one another with the aid of supporting members and located so as to come in contact with the vibratory pieces formed integrally with the mass to be driven and arranged on the end face of the supersonic oscillator in such a manner that operational phases of the respective oscillators lag each other by a predetermined phase angle so as to obtain even and smooth rotation of the mass.

4,325,265

STARTER DEVICE FOR INTERNAL COMBUSTION ENGINE

Goroei Wakatsuki, Fujimi, and Masahide Yokoo, Tsurugashima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,719

Claims priority, application Japan, Mar. 2, 1979, 54/24185; Mar. 5, 1979, 54/27711[U]; Mar. 19, 1979, 54/35310[U]

Int. Cl.³ F02N *15/06*

U.S. Cl. 74—7 R **18 Claims**

1. A starter device for an internal combustion engine, comprising:

a starter motor;

a pinion shaft connected with said starter motor so as to be rotated by said starter motor;

a movable cylindrical member fitted on said pinion shaft and coupled thereto by a helical spline coupling;

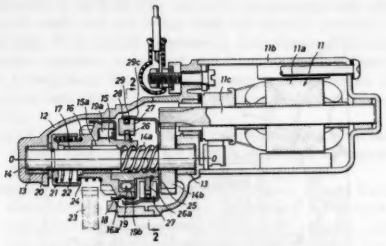
a pinion gear fitted for free rotation on said pinion shaft;

a unidirectional clutch provided between said pinion gear and said movable cylindrical member;

said pinion gear and said movable cylindrical member being coupled together for axial movement in unison with each other;

means for preventing retreat of said pinion gear provided on the outer periphery of said movable cylindrical member;

said pinion gear retreat-prevention means being axially fixed in position but radially movable relative to said movable cylindrical member; and



a lock member provided at a position in the vicinity of said pinion gear retreat-prevention means so as to be engageable with said pinion gear retreat-prevention means when said pinion gear retreat-prevention means is radially displaced by centrifugal forces.

4,325,266

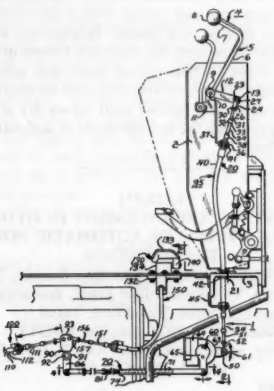
ACCELERATOR/DECELERATOR PEDAL AND SYSTEM

Larry W. Lynch, Galion, Ohio, assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Mar. 18, 1980, Ser. No. 131,455

Int. Cl.³ G05G *1/14, 11/00*

U.S. Cl. 74—482 **15 Claims**



1. An accelerator/decelerator system for a vehicle comprising:

throttle means operatively coupled to a speed control device of a vehicle to control the engine speed or output thereof;

said throttle means including a manually adjustable member being movable in a range of positions to establish an engine speed or output in accordance with a selected one of said positions;

said throttle means further including throttle linkage means coupling said adjustable member to the speed control device of the vehicle;

override means to temporarily alter engine speed or output determined by a selected one of said positions of said adjustable member;

said override means including an actuator and override linkage means operatively coupling said actuator to the speed control device;

said actuator being mounted for selected override movement to control engine speed or output and override the engine speed or output determined by the adjustable member;

said throttle linkage means including spring linkage means operatively coupled to said override linkage means permitting engine speed or output to resume as determined by a selected one of said positions upon release of said actuator;

said actuator being a foot pedal mounted on a shaft for selected pivotal movement about an axis extending in a substantial longitudinal direction toward the operator's position of the vehicle to permit said foot pedal to be operated in a lateral plane, and

said foot pedal being operated in a first lateral direction to accelerate engine speed or output and in a second lateral direction to decelerate engine speed or output.

4,325,267

BICYCLE CONTROL LEVER DEVICE HAVING CONTROL LEVER MOVEMENT CONFORMING TO A CYCLIST'S FINGERS

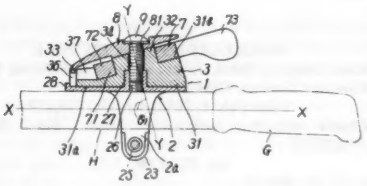
Masao Kojima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 21, 1980, Ser. No. 142,379

Claims priority, application Japan, May 2, 1979, 54-59086[U]

Int. Cl.³ G05G *7/00, 5/06*

U.S. Cl. 74—489 **5 Claims**



1. A control lever device for a bicycle mounted on a handle bar in the vicinity of a grip thereat, said device comprising:

a fixing member attached to said handle bar;

a lever shaft mounted on said fixing member, said lever shaft being slanted at the foremost end thereof in the direction away from said grip with respect to the axis of said handle bar; and

a control lever for moving a control wire, said control lever having a boss and a control portion supported rotatably to said lever shaft through said boss, said control portion of said control lever being positioned adjacent to said grip, said control portion being positioned radially outwardly of said handle bar with respect to said boss.

4,325,268

SAFETY STEERING COLUMN ASSEMBLY FOR AUTOMOBILES

Hubertus Benteler, Bielefeld; Rainer Hansen; Egon Olszewski, both of Paderborn-Elsen, and Ferdinand Wecker, Paderborn-Sennelager, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,351

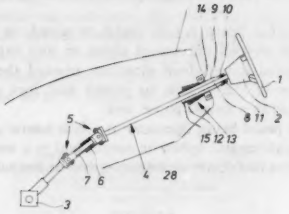
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911021

Int. Cl.³ B62D *1/18*

U.S. Cl. 74—492 **12 Claims**

1. A safety steering column assembly for automobiles comprising steering shaft means of variable axial length for connecting a steering wheel with a steering gear mechanism; a guide and support tube surrounding a portion of the steering shaft means in a region adjacent the steering wheel; impact absorption means comprising a corrugated tube in which the corrugations are compressed to a block and in which the stiff-

ness of the corrugation changes along the length of the corrugated tube, said corrugated tube surrounding a portion of the guide and support tube and having an end distant from the steering wheel fixedly connected to said guide and support



tube; and means for connecting the other end of the corrugated tube to a portion of the body of the automobile, so that said impact absorption means is stressed in tension upon impact of a force on the steering wheel.

4,325,269

WIRE GUIDE FOR A BICYCLE

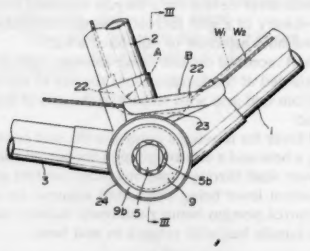
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 6, 1980, Ser. No. 119,137

Claims priority, application Japan, Feb. 20, 1979, 54/21227[U]

Int. Cl.³ F16C *1/00*

U.S. Cl. 74—501 R **2 Claims**



1. A wire guide for mounting with a bottom bracket of a bicycle, said bottom bracket supporting a crank shaft and provided with threaded bearing tubular members for supporting said crank arm, said wire guide comprising,

a guide body, said guide body having a guide groove for guiding therethrough a control wire for a derailleur at the bicycle and having a support extending from said guide groove axially of said bottom bracket,

a fixture provided in continuation of the extending end of said support at said guide body, said fixture comprising a ring plate having a narrow width and circular arc, having an inner periphery of a larger diameter than an inner diameter of said bottom bracket, being approximately perpendicular to the direction of said extending end, and being opposite to one axial end face of said bottom bracket, so that said threaded tubular member is screwed with said bottom bracket to thereby fix said fixture to said bottom bracket, said ring plate including a plurality of projections extending axially of said bracket.

4,325,270

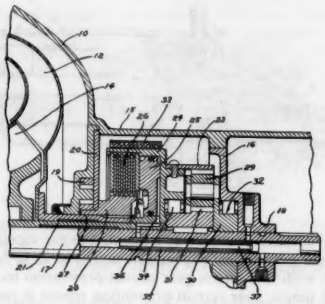
TORQUE CONVERTER MECHANISM

Edwin C. McRae, Box 922, Cusseta, Ala. 36852

Filed Nov. 23, 1979, Ser. No. 96,653

Int. Cl.³ F16H *47/04, 47/08, 57/10*

U.S. Cl. 74—677 **4 Claims**



1. In a motor vehical torque converter having impeller and turbine and stator members mounted to define a fluid circuit, a planetary gear set comprising a planet carrier and a sun gear and a ring gear and planet pinions rotatably mounted upon said carrier to mesh with said sun gear and ring gear to form said gear set, a turbine shaft which connects said turbine to said sun gear, a stator sleeve rotatably mounted to rotate in a reverse direction around said turbine shaft connecting said stator to said ring gear, and an overrunning clutch disposed between the converter housing and said carrier which prevents rearward rotation of said carrier, said carrier functioning as a torque re-action member to reverse the rearward torque of said stator into forward torque on said turbine shaft, and said ring gear and sun gear being of such relative sizes that reverse rotation of said stator will drive said turbine shaft forwardly at a substantially greater speed than the reverse speed of said stator, for the purpose described.

4,325,271

SHOCK CONTROL ARRANGEMENT IN HYDRAULIC CONTROL SYSTEM OF AUTOMATIC POWER TRANSMISSION

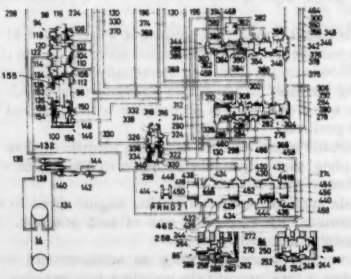
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 8, 1978, Ser. No. 958,915

Claims priority, application Japan, Aug. 7, 1978, 53/95920

Int. Cl.³ B60K *41/06*

U.S. Cl. 74—869 **12 Claims**



1. In an automatic power transmission having a transmission mechanism including a fluid operated frictional unit adapted to

effect, when hydraulically actuated, an upshift between two predetermined lower and higher gear ratios in an automatic forward drive range condition of the power transmission, and a hydraulic control system including a transmission throttle valve responsive to load on the engine for producing a throttle pressure variable with engine load, a pressure regulator valve responsive to said throttle valve for producing a line pressure variable with and not lower than the throttle pressure and a hydraulic fluid circuit operatively intervening between said pressure regulator valve and said frictional unit, a shock control arrangement for controlling mechanical shocks in said frictional unit during upshifting between said gear ratios, comprising:

signal pressure supply means communicating with said hydraulic fluid circuit for delivering thereto a signal fluid pressure variable with said throttle pressure;

pressure reducing valve means provided in said hydraulic fluid circuit and operative to develop an output fluid pressure variable with said signal fluid pressure, said output fluid pressure being always lower than said line pressure, the pressure reducing valve means including a valve element having a first pressure acting area to be acted upon by said signal fluid pressure for urging the valve element to move in a first direction and a second pressure acting area to be acted upon by said output fluid pressure for urging the valve element to move in a second direction, resilient biasing means urging the valve element to move in one of said first and second directions, the valve element being responsive to an excess of fluid pressure higher than said output fluid pressure and movable in said second direction in response to the excess of fluid pressure, and fluid discharge means for discharging the excess of fluid pressure from the pressure reducing valve means in response to movement of said valve element in said second direction; and

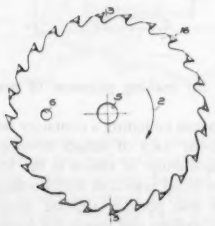
output pressure passageway means for providing fluid communication between said pressure reducing valve means and said frictional unit for conducting said output fluid pressure to the frictional unit in the presence of the output fluid pressure in the pressure reducing valve means, whereby upon the upshift between the predetermined lower and higher gear ratios, said frictional unit is operated only by said output fluid pressure which is variable with said signal pressure and which is always lower than said line pressure.

4,325,272

METHOD OF MAKING SAW BLADES

Robert D. Kelsey, Halfway, England, assignor to Bramah Stainless Products Limited, Sheffield, England

Filed Oct. 11, 1978, Ser. No. 950,740
Int. Cl.³ B23D *65/02*
U.S. Cl. 76—112 **8 Claims**



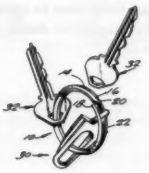
1. A method of manufacturing a circular saw blade comprising advancing a blank in strip form of thickness required for said saw blade and of width slightly greater than the diameter required for said saw blade, and having the physical characteristics required of said saw blade through a press tool having multiple blanking stations, the method comprising effecting a first blanking operation on said blank at a first blanking station to blank out leading edges of non-consecutive teeth simultaneously with trailing edges of preceding adjacent teeth, advancing said blank to at least one subsequent blanking station and blanking out identical edges of some or all of the remaining teeth, advancing said blank to a further blanking station and forming outer edges on some or all of the teeth separate from forming the leading and trailing edges of said teeth, and blanking a centre hole and a drive hole at one of said stations.

4,325,273

OPENER FOR SPLIT RING KEY HOLDER

James Gibbons, 205 W. Riverside Dr., Truth or Consequences, N. Mex. 87901

Filed Jun. 12, 1980, Ser. No. 158,806
Int. Cl.³ A44B *15/00*
U.S. Cl. 81—3 R **14 Claims**



1. For facilitating installation of a key on and removal of the key from a split ring key retainer of the type comprising a tight helix of an internal diameter D of strip material which extends through at least one complete helical turn and at least a fraction of another, so as to have a portion intermediate two opposite ends of the strip, where corresponding portions of axially adjoining turns normally abut one another providing a normally closed split,

an opener device, for temporarily opening up the split, near either end thereof so that a key already on the split ring can be begun to be wound off, or so that a key not yet on the ring can be begun to be wound onto the ring, said opener device comprising:

a shank having a handle at one end and a bit at the axially opposite end thereof;

said bit comprising an axially forwardly tapering wedging probe based on said shank, which wedging probe tapers to a tip;

said handle having means defining an axially elongated slot formed completely through the thickness thereof, and by which the opener device itself may be carried on the split ring key retainer just as if it were a key;

said slot being so long that the length L axially along the opener device from the slot to said wedging probe tip is less than said internal diameter D.

4,325,274

HYDRAULIC FORCE PRODUCING DEVICE

Ghislain A. Martelee, Liege, Belgium, assignor to Cockerill, Seraing, Belgium

Filed Jun. 11, 1980, Ser. No. 158,442
Claims priority, application Belgium, Jun. 22, 1979, 0195900
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.13 **9 Claims**

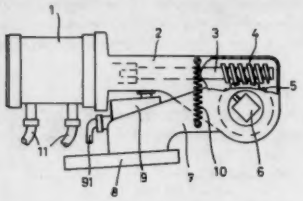
1. A hydraulically operated device for applying a force to a component, said device comprising:

first engagement means adapted to abut a support surface; and

second continuous action engagement means mounted within a first arm to engage said component;

first hydraulically operated driving means mechanically coupled to the second engaging means and adapted to drive the second engaging means at a relatively high

speed, said first driving means and associated gears retaining the second engagement means fixed relative to the first engagement means, and a second hydraulically operated driving means positioned to move the second engaging



means with an increasing force at a relatively low speed but with a substantial force thus to impart a further movement to the second engagement means relative to the first engagement means.

4,325,275

ADJUSTABLE OPEN-END AND BOX-END WRENCH

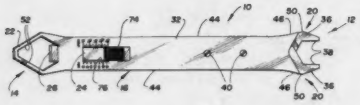
David S. Colvin, 31324 Burbank, Farmington Hills, Mich. 48018

Filed Apr. 23, 1980, Ser. No. 143,052

The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.

Int. Cl.³ B25B *13/10, 13/18*

U.S. Cl. 81—77 **16 Claims**



1. In an adjustable open-end and box-end wrench including an elongated housing of a hollow construction, a polygonal box structure on one end of the housing, an adjusting member received within the housing for longitudinal movement with respect thereto and having an outer engagement surface for cooperating with the box structure to grip nuts and bolt heads of different sizes in accordance with the longitudinal position of the adjusting member so as to thereby provide an adjustable box-end wrench, and a pair of jaws having inner ends connected to the adjusting member within the housing for longitudinal movement therewith and having outer ends with associated engagement surfaces that oppose each other in a parallel relationship, the improvement comprising: a pair of pins mounted on the housing spaced longitudinally therealong adjacent the jaws; each jaw including a pair of slots that respectively receive the pair of pins; the slots of each jaw extending parallel to each other in a skewed relationship to the longitudinal axis of the housing such that the longitudinal jaw movement is accomplished by lateral movement of the jaw engagement surfaces toward or away from each other while maintaining the parallel relationship therebetween in order to provide an adjustable open-end wrench; a lock mechanism for locking the adjusting member and the jaws against longitudinal movement to control the size of nuts or bolt heads that can be gripped by either the open-end or box-end of the wrench; and interengaged slide surfaces on the housing and each jaw at the open-end of the wrench for cooperating with the pins and slots to position the jaws in any adjusted position.

4,325,276

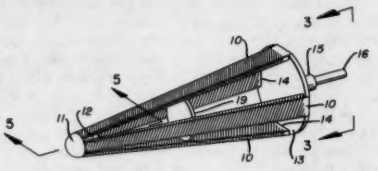
NIPPLE ENGAGING TOOL

William Jordan, 2990 McVey, Campbell, Ohio 44405

Filed Sep. 25, 1980, Ser. No. 190,707

Int. Cl.³ B25B *13/54*

U.S. Cl. 81—441 **5 Claims**



1. A device for turning threaded fittings onto threaded articles, said device having a continuously tapered body formed of a plurality of elongated metal cutting files, end members of different sizes, said files attached at their respective ends to said end members in tapered relation to an axial center line engaging said end members, said files arranged in circumferentially spaced relation to one another and a shaft formed on one of said end members and extending outwardly therefrom on said axial center line.

4,325,277

DISPENSER FOR MAKING PAYMENT OF PRE-PACKED PAPER SHEETS

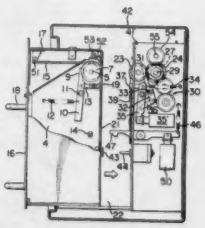
Isamu Uchida; Eiichi Kokubo, and Toshinobu Sasaki, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,191

Claims priority, application Japan, May 25, 1979, 54-64656

Int. Cl.³ G07F *11/68*

U.S. Cl. 83—205 **5 Claims**



1. A dispenser for making payment of pre-packed paper sheet comprising:

container unit means including a container section for stocking a continuous train of sealed envelopes enclosing a predetermined number of sheets in the folded condition, said envelopes being provided with perforations at at least one marginal side portion, shifting means for meshing with said perforations and means for locating the train of the envelopes by a preset pitch; and

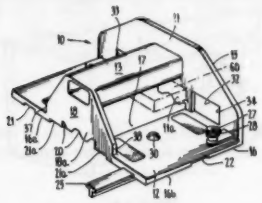
dispensing unit means having a cavity for receiving said container unit means and including means for actuating said locating means of the container unit means, conveyor means operable to receive and convey said train of envelopes by said preset pitch, and cutter means for cutting off a leading envelope from said train along the folded line.

4,325,278

HAND SAW GUIDE

Cornelis J. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia

Filed Feb. 28, 1980, Ser. No. 125,564
Claims priority, application Australia, Mar. 1, 1979, PD7861; Sep. 17, 1979, PE0524
Int. Cl.[3] B27B *21/08*
U.S. Cl. 83—745 9 Claims



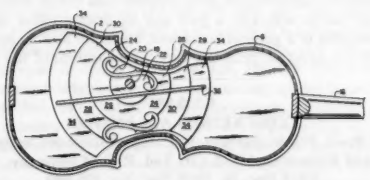
1. A hand saw guide comprising an integral moulded first member having two right angular related flat faces arranged to permit location of one face in face to face relation with a surface of a workpiece with the other face perpendicular to said surface of the workpiece, two sets of elongated grooves in said one face of the first member, said sets of grooves being spaced from one another, each set of grooves including one groove at right angles to said other face and one at 45 degrees to said other face, a second member adapted to be selectively seated in any one of said grooves with a portion of said second member projecting from said one face and extending in the direction of the groove in which it is seated, means to lock said second member in any one of said grooves, said portion of the second member being adapted to engage an edge of the workpiece when the second member is locked in a selected groove and with the one face of the first member in said face to face relation with the workpiece to thereby set the angle of the other face to said edge of the workpiece.

4,325,279

SOUND BOX FOR MUSICAL INSTRUMENT

Louie H. Lower, P.O. Box 151, Hayden Lake, Id. 83835

Filed Oct. 14, 1980, Ser. No. 196,380
Int. Cl.[3] G10D *1/02*
U.S. Cl. 84—275 10 Claims



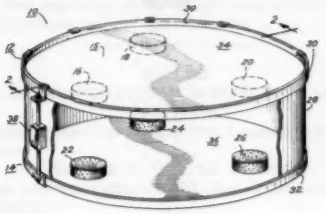
1. A musical instrument sound box comprising a front wall, a back wall, said front and back walls being interconnected by a side wall, string retainer means disposed on said box and adapted to retain strings proximate an outward surface of said front wall, a first of said front and back walls having distinct zones of wall thickness, a first zone of most wall thickness being proximate a central portion of said first wall, a last zone of least wall thickness being most removed from said central portion, and an intermediate zone between said first and said last zones, and having a wall thickness less that said first zone, said first zone being substantially circular, and said intermediate and last zones being of generally interrupted annular configuration disposed concentrically about said first zone.

4,325,280

DEVICE FOR DEADENING DRUMHEADS

Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.

Filed Apr. 14, 1980, Ser. No. 139,719
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.[3] G10D *13/02*
U.S. Cl. 84—411 M 19 Claims



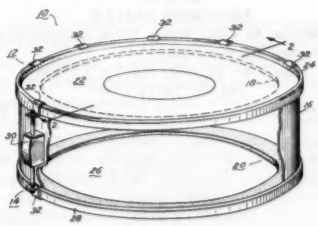
1. A device for deadening drumheads to minimize the ringing phenomenon associated principally with synthetic drum membranes: said devices comprising a plurality of bodies of porous, pliable material for reacting with one another and with the drumhead membrane, said bodies being positioned generally around the preferred attack area of the membrane, and an adhesive layer on each of said bodies for attaching each of said bodies to the drumhead membrane.

4,325,281

DRUMHEAD RING REDUCER

Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.

Filed Jul. 2, 1980, Ser. No. 165,273
Int. Cl.[3] G10D *13/02*
U.S. Cl. 84—411 M 14 Claims



1. In a musical drum having a drum shell and a drumhead membrane: a drumhead ring reducer comprising an annular body of porous pliable material disposed in contact with the inner side of the membrane for reacting with the membrane without substantially muffling the percussive drum sounds to reduce the ringing phenomenon, and a layer of adhesive on said body for attaching said body to the inner surface of the drum shell.

4,325,282

UNITIZED CASE RESIZER AND TRIMMER

Mark Schaenzer, 11737 N. Solar Ave. 77W, Mequon, Wis. 53092

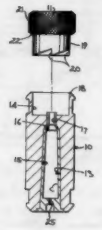
Filed Jul. 14, 1980, Ser. No. 168,012
Int. Cl.[3] F42B *33/00*
U.S. Cl. 86—24 6 Claims

1. An apparatus for resizing and trimming a used cartridge, comprising:

a sizing body having a longitudinal bore formed there-

through that includes a cutter-receiving portion at one end, and a coaxial cartridge-receiving portion at its other end for receiving and reshaping at least a portion of the external configuration of a used cartridge driven therein by mechanical force; and

a rotatable cutter having a cutting edge adapted to be inserted into the cutter-receiving portion of said bore to



engage and trim the neck of a used cartridge disposed within the cartridge-receiving portion of said bore, said cutter having a projecting shoulder formed along its length engageable with said body so that said cutting edge may be inserted within the cutter-receiving portion of said bore only a predetermined distance to trim the overall length of the used cartridge to its proper standard dimension.

4,325,283

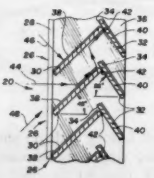
ARMORED GRILLE

James M. Bemiss, St. Clair Shores, Mich., assignor to Cadillac Gage Company, Warren, Mich.

Filed Mar. 19, 1980, Ser. No. 131,585

Int. Cl.³ F41H *5/00*

U.S. Cl. 89—36 F **9 Claims**



1. An armored grille for a vehicle body opening comprising: a plurality of vertically spaced louvers having elongated shapes extending horizontally across the opening; each louver including an outer armor plate that is inclined downwardly in an outward direction with respect to the opening; each louver also including an inner armor plate that is engaged with and secured to the upper and inward extremity of the associated outer armor plate; and each inner armor plate extending downwardly from the associated outer armor plate and having an upper extremity that projects above the associated outer armor plate to deflect a projectile impacted therewith upwardly toward the engaged outer and inner armor plates of the next higher louver so as to thereby prevent passage of projectiles through the grille.

4,325,284

TRUNNION BEARING IN ARMORED HOUSING

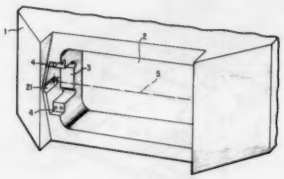
Peter Grünewald, Fuldabruck, and Uwe Sprafke, Kassel both of Fed. Rep. of Germany assignors to Wegman & Co. GmbH, Fed. Rep. of Germany

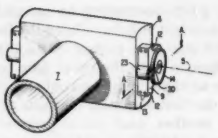
Filed Nov. 19, 1976, Ser. No. 744,948

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1975, 2552009

Int. Cl.³ F41F *23/06*

U.S. Cl. 89—37 E **2 Claims**





1. A battletank turret having an aperture for receiving a gun barrel mount from the outside of the turret without vertical separation of the turret comprising:

a cradle roller for receiving a gun barrel, said cradle roller having a trunnion laterally extending from opposite sides thereof;

a bearing ring carried by each of said trunnions, each of said bearing rings having an upwardly extending lug and a downwardly extending lug on the gun muzzle side of said cradle roller, said lugs being apertured to receive fastening means, and being adapted for support by cooperating shoulders on a pair of generally U-shaped recesses open to the outside of the turret in the side walls defining the aperture in the turret;

fastening means extending through the apertures in said lugs into said cooperating shoulders at the gun breech end of said generally U-shaped recesses to thereby secure said bearing ring and thus said cradle mount to the turret; and

means for adjusting the play between said cradle mount and the turret whereby a gun and its cradle roller may be inserted in a general horizontal direction into an aperture in the turret without the vertical separation of the turret.

4,325,285

COMPRESSED AIR MOTOR

Erich Roser, Friedrichshafen, Fed. Rep. of Germany, assignor to Rudolf Hübner GmbH & Co., Fed. Rep. of Germany

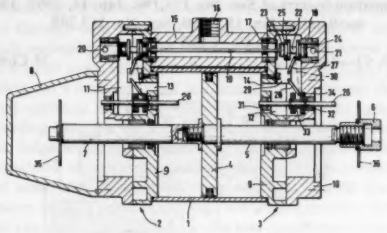
Filed Dec. 28, 1979, Ser. No. 108,040

Int. Cl.³ F01L *23/00, 31/02*

U.S. Cl. 91—341 R **8 Claims**

1. A compressed air motor, comprising, a cylinder, a piston slidable in said cylinder, a compressed air inlet to said cylinder, a slide valve mechanism connected between said compressed air inlet and each end of said cylinder for admitting air to respective ends of said cylinder for driving said piston in respective directions and for venting the side of said cylinder in front of the direction of movement of said piston, an action rod disposed in the path of said piston on each end of said cylinder and being movable by said piston upon a predetermined movement of said piston, a snap lever mechanism connected between each action rod and said slide valve mechanism and acting on said slide valve mechanism upon movement of said

action rod to reverse said slide valve mechanism after the predetermined movement of said piston, and means connected



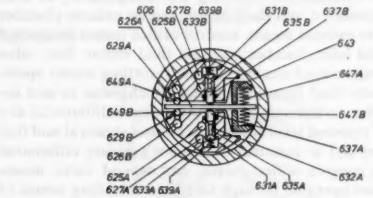
to said piston to move each said action rod back to an initial position upon return movement of said piston.

4,325,286

STEERING VALVE MECHANISM HAVING CLOSED NEUTRAL POSITION

Armin Lang, Schwäb. Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,840
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—373 **4 Claims**



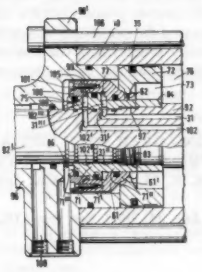
1. A valve mechanism for a hydraulically operated steering system having a pressure source (**4, 604, 804**) from which pressurized fluid is conducted by supply conduits (**3, 403, 503, 603, 716**) to operating chambers (**20, 520, 623, 715, 832**) of a servomotor (**21, 500, 709, 810**) through the steering valve mechanism (**2, 22-24, 422-424, 522-524, 631-629, 707-734, 818**) which includes a pair of inlet valves (**6, 28, 428, 522, 613, 707, 818**) blocking flow to the servomotor in a neutral position of an associated valve actuator (**12, 38, 470, 570, 641, 701, 806**), and a fluid reservoir (**69, 608, 828**) to which fluid is exhausted from the operating chambers by return conduits (**53, 458, 558**) through a pair of outlet valves (**24, 424, 524, 629, 734, 814**); the improvement which comprises: regulating spring means (**10, 26, 466, 566, 647, 703-728, 820**) operatively connecting the valve actuator to the inlet valves for transmitting a valve operating force in opposite directional senses to the respective inlet valves in response to displacemeent of the valve actuator from the neutral position, whereby a regulated pressure proportional to the valve operating force is established in one of the operating chambers to which pressurized fluid is conducted by one of the inlet valves, differential pressure control means (**32, 474, 574, 606, 703**) operatively connecting the regulating spring means to the outlet valves for exerting a bias on each of the outlet valves in a directional sense opposite to the valve operating force applied to the associated inlet valve, whereby each of the outlet valves maintains a pressure in each of the operating chambers higher than said regulated pressure established by the associated inlet valve, by a substantially constant pressure difference (ΔP), said differential pressure control means including supplementary spring means (**639, 722, 822**) exerting a closing bias on each of the inlet valves independently of the pressure of said source in the supply conduits, each of said inlet valves including a valve body having a valve bore, a valve element (**633, 717**) on which said supplementary spring means acts, and a valve piston (**637, 720, 819**) slidably mounted in said bore and connected to the valve element, the supply conduits being connected to the valve bores between the valve elements and the pistons, each of the operating chambers having one of the inlet valves and one of the outlet valves assigned thereto for controlling the flow of fluid thereto and exhaust of fluid therefrom, and a balance beam (**703**) engageable with each of said inlet and outlet valves, said regulating spring means being disposed between the balance beam and the valve actuator.

4,325,287

HYDRAULIC ACTUATOR FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,435
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845448
Int. Cl.³ F15B *11/18*
U.S. Cl. 91—422 **9 Claims**



1. An improvement in a hydraulic actuator assembly of the type which is usable to open and close an injection molding die in the die closing unit of an injection molding machine, which hydraulic actuator assembly includes; a power cylinder enclosing a double-acting power piston attached to a piston rod which sealingly extends through both axial extremities of the power cylinder, so as to define a high pressure space on that axial side of the power piston from which the latter moves away in a die closing stroke and a low pressure space on the opposite axial side of the power piston; an annular valve seat on the high-pressure side of the piston rod, in a concentrically spaced relationship with the piston rod; at least one bypass channel extending axially through the power piston so as to form a bypass flow connection between the two pressure spaces of the power cylinder, the bypass channel having its opening to the high-pressure side located radially within said valve seat; an annular valve plunger arranged on the piston rod, in the high-pressure space of the power cylinder, the valve plunger being axially slidable on the piston rod, for movements into and out of contact with said valve seat, thereby closing and opening the bypass flow channel; and hydraulic means for controlling the opening and closing movements of the valve plunger, the improvement in said assembly relating more specifically to the valve plunger and its hydraulic control means and comprising:

a bore formation in the valve plunger defining first, second and third cylindrical bore portions in axial succession, the first and third bore portions being smaller in diameter than the second bore portion;

three successive matching guide portions on the piston rod, the smaller-diameter first and third guide portions being located on opposite axial sides of a collar formation, and

the second guide portion being defined by the periphery of the collar formation, the three guide portions cooperating with the three plunger bore portions to form first, second and third sliding seals, which define a valve-closing pressure space between the first and second sliding seals and a valve-opening pressure space between the second and third sliding seals; and

two hydraulic supply lines leading to the two plunger pressure spaces, via two pressure channels in the piston rod; and wherein

the outer diameter of the contact surface between the valve plunger and the valve seat on the power piston is larger than the diameter of the third sliding seal, so that the valve plunger, in its closed position, receives a closing bias from a pressure in the surrounding high-pressure space, but the effective area for this closing bias on the closed plunger is smaller than the effective area of the valve-opening pressure space; and

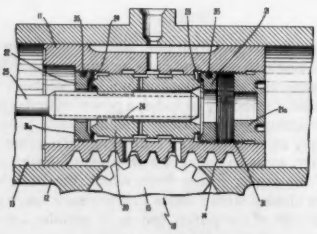
the effective area of the valve-closing pressure space, as determined by the difference in diameter of the first and second sliding seals, is larger than the area of the valve plunger which is exposed to the fluid pressure of the low-pressure space, in the closed valve position, as determined by the inner diameter of the contact surface on the valve seat of the power piston, thereby making it possible to exert an elevated die-opening force on the power piston by simultaneously pressurizing the low-pressure space of the power cylinder and the valve-closing pressure space.

4,325,288

POWER STEERING GEAR WITH INITIAL LOCKABLE SPRING ADJUSTING NUTS

Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Jan. 24, 1980, Ser. No. 115,045
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—422 **11 Claims**



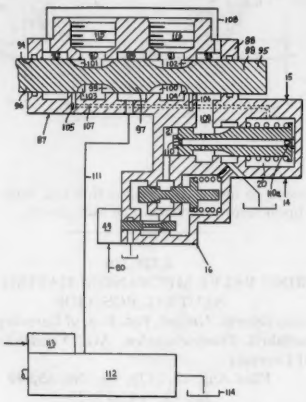
1. An integral power steering gear having a reciprocating power piston in a cylinder, a valve within the piston to selectively distribute pressurized fluid to a first and second end of the piston within the cylinder for steering action, a washer spring adjacent each end of said piston to provide centering action for the valve, a steering input shaft operatively engaging the valve, output means in engagement with said piston, the improvement comprising an adjusting nut having threads mounted adjacent each end of said valve in the piston for adjusting the loading in the washer springs, openings in said piston having mating threads for operatively receiving the adjusting nuts, aperture means provided in one of said threads and a deformable insert means placed in said aperture means, the deformable insert means being deformed upon engagement with the other threads, centering said nut and establishing sufficient friction to prevent inadvertent movement of said adjusting nut during subsequent manufacturing steps of preloading of the springs and final locking of the adjusting nut in position.

4,325,289

LOAD RESPONSIVE FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 111,194, Jan. 11, 1980. This application Jan. 18, 1980, Ser. No. 113,288
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—446 **34 Claims**



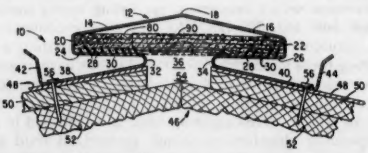
1. A valve assembly comprising a housing having an inlet chamber connected to a fluid motor, and an exhaust chamber connected to exhaust means, control orifice means interposed between said inlet chamber and said fluid motor, first valve means having control means and fluid throttling means operable to throttle fluid flow from said inlet chamber to said exhaust chamber to maintain a constant pressure differential at a preselected constant level across said control means at said first valve means and to maintain a constant pressure differential across said control orifice means, and second valve means having means operable through said fluid throttling means of said first valve means to vary the level of said constant pressure differential across said control orifice means while said pressure differential across said control means of said first valve means remains constant at said constant predetermined level.

4,325,290

FILTERED ROOF RIDGE VENTILATOR

Clarke K. Wolfert, Peoria, Ill., assignor to Air Vent, Inc., Peoria, Ill.

Filed Oct. 6, 1980, Ser. No. 194,581
Int. Cl.³ F24F *7/02*
U.S. Cl. 98—42 A **9 Claims**



1. In roof edge ventilator adapted to be installed overlying the open ridge of and along the length of the roof of a building, said ventilator including an integral, elongate member providing a top part, a pair of outer side walls depending from the top part, a pair of panels with louvered openings extending from said side walls inwardly toward each other and spaced below the top part, wall means on said; panels forming a throat in registry with the open ridge, flashing parts spaced below the panels extending outwardly from said wall means and protruding beyond the outer side walls, and baffle means upstanding

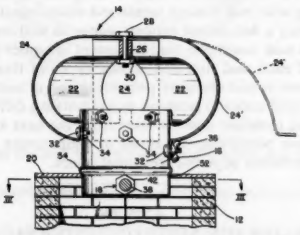
from ends of the flashing parts and spaced from said outer side walls; the improvement comprising: means for filtering moisture from any air which passes inadvertently from said space between the baffles and side walls to enter the space below the roof through said louvered openings as a result of external winds impinging against the ventilator from a direction which is at a small angle relative to the length of the ventilator, comprising: (a) a moisture filter medium located between the louvered openings and the space below the roof in the path of air extending from the louvered openings through the throat and open ridge to the space below the roof, so that all air passing through the elongate member to and from the space below the roof must pass through the filter medium; and (b) the filter medium being a porous, resilient, nonwoven member having a high impedance to moisture and a low impedance to air flow and having a substantial thickness selected so that air passing into the filter medium from the space below the roof and striking said moisture may move laterally of and around the trapped moisture and through the ventilator for exhausting to ambient atmosphere, whereby in freezing conditions any moisture collected in said filter medium may freeze, thereby closing off or restricting inflow through the louvered openings.

4,325,291

CHIMNEY CAP AND SECUREMENT

Richard H. Paynton, and William C. Paynton, both of Attleboro Falls, Mass., assignors to Improved Consumers Products, Inc., Attleboro Falls, Mass.

Filed Feb. 19, 1980, Ser. No. 122,777
Int. Cl.³ F23L *17/12*
U.S. Cl. 98—67 **7 Claims**



1. A cap capable of being secured to a chimney or flue of any configuration or size comprising:

an annular member for insertion into a chimney or flue, said annular member having an outside circumference smaller than an opening of said chimney or flue;

a first plurality of slats separated by spaces along at least a portion of their length in a circumferential direction and connected to said annular member to form a first crown;

a second plurality of slats connected to said annular member to form a second crown exterior said first crown with the slats of said second crown being aligned with the spaces between the slats of said first crown;

one of said slats of said second crown being detachable at its connection to said annular member to allow access to the interior of said annular member;

an exterior circumferential rim below said connection of said slats on said annular member for engaging a plate covering the top of a chimney and through which said annular member is to be inserted to thereby support said cap on said plate; and

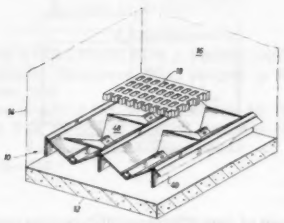
securement means extending from the interior through to the exterior of said annular member for securing said cap and said plate to said chimney or flue by engaging the interior of said chimney or flue when adjustably extended.

4,325,292

BLAST ROOM FLOOR

Richard P. McNinney, Jr., 9707 Braeburn Glen, #102, and Robert E. Thompson, 9206 Cadawac, both of Houston, Tex. 77074

Continuation of Ser. No. 844,602, Oct. 25, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,291
Int. Cl.³ B08B *15/02*; B05C *15/00*
U.S. Cl. 98—115 SB **4 Claims**



1. An apparatus for collecting blastroom particles, debris, and other particulate matter which settles on the floor thereof, comprising:

(a) a first wall piece adapted to abut a single wall of the blastroom;

(b) a plurality of similar angle sections disposed parallel to said first wall piece, each of said angle sections including first and second sides disposed at an angle to one another to form a V-shaped valley therebetween and being positioned so that said first wall piece supports one of said angle sections in an upright position with the valley thereof exposed to receive falling particulate matter thereon;

(c) a plurality of lock plates to secure said angle sections in upright positions relative to said first wall piece above the floor of the blastroom;

(d) a plurality of vacuum tubes each having a plurality of holes therein along the length thereof and adapted to remove particulate matter by vacuum flow, a respective one of said vacuum tubes being longitudinally disposed in each of said angle sections between the first and second sides thereof to expose the holes therein to enable the particulate matter to enter therein;

(e) a plurality of identical multi-sided inserts positioned longitudinally in said angle sections over said vacuum tubes to funnel particulate matter into the holes in said vacuum tubes for removal of the particulate matter from the blastroom, said inserts having notches therein constructed and arranged to fit over said vacuum tubes; and

(f) a plurality of spacers placed on said vacuum tubes to position said inserts along said tubes so that the particulate matter funnels toward the holes disposed therein.

4,325,293

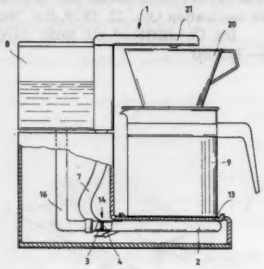
APPARATUS FOR MAKING INFUSION DRINKS

Ingo Bleckmann, Ignaz-Rieder-Kai 11, 5020 Salzburg, Austria

Filed Nov. 20, 1979, Ser. No. 96,178
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851224; European Pat. Off., Jun. 29, 1979, 79102191.8
Int. Cl.³ A47J *31/057*
U.S. Cl. 99—300 **22 Claims**

1. In apparatus for making an infusion beverage, comprising means for receiving a fluid supply container, a fluid throughflow conduit adapted to communicate with said supply container to carry fluid therefrom, means having a heating output from 500 to 1,000 watts for heating fluid in said conduit, a pipe adapted to carry heated fluid to an outlet for infusion of the beverage, and means disposed between said supply container and a part of said conduit for regulating the flow of fluid therethrough, the improvement wherein said regulating means

is a restrictor means operable to reduce the cross-section of the flow therethrough to a cross sectional area having an effective diameter not larger than 3.0 mm and to increase the through-flow speed whereby the quantity of fluid flowing through the



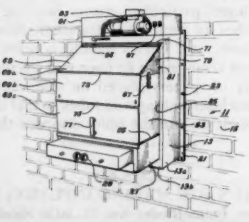
conduit per unit of time is substantially constant over substantially the entire period for which the fluid is flowing through the apparatus and the flow pressure in the restrictor means is higher than a fluid pressure required for driving the fluid out of said pipe.

4,325,294

COLLAPSIBLE OUTDOOR COOKING APPARATUS

Grover M. Hammond, 2005 Vista Trail, Roanoke, Tex. 76262

Filed May 9, 1980, Ser. No. 148,564
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—337 **14 Claims**



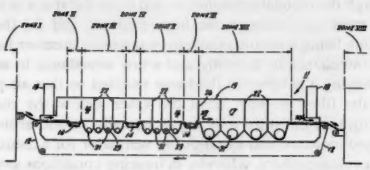
1. A cooking apparatus, comprising in combination:
a housing having sidewalls and a front opening;
mounting means for mounting the housing to a building wall with the opening facing outward;
a tray carried in the housing;
pivot means for moving the tray between a vertical position contained within the housing, to a horizontal position protruding outward from the opening;
a grill carried by the tray for holding food for cooking;
frame means mounted in the tray below the grill for carrying a plurality of rocks; and
energy means carried by the tray and having burners below the grill for providing heat.

4,325,295

APPARATUS FOR PREPARING FRENCH FRIED POTATOES

Andrew A. Caridis, Foster City; Clark K. Benson, Millbrae; Steven G. Leary, San Mateo, and Arthur A. Nilsen, San Francisco, all of Calif., assignors to Heat and Control, Inc., San Francisco, Calif.

Division of Ser. No. 13,461, Feb. 21, 1979, Pat. No. 4,269,861.
This application Jan. 19, 1981, Ser. No. 226,469
Int. Cl.³ A47J *37/00*
U.S. Cl. 99—339 **4 Claims**



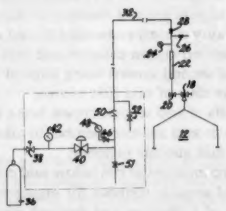
1. In apparatus for preparing french fried potatoes wherein pre-fried french fried potatoes are obtained with low oil content, the combination of: means forming a treatment chamber of appreciable length, conveyor means extending continuously through said treatment chamber serving to carry french fried potato slices there through for process treatment, said conveyor means being of open, wire-mesh construction, means in said treatment chamber defining a treatment zone of a first type serving to treat all surfaces of the potato slices in a supply of hot oil, means in said treatment chamber defining a treatment zone of a second type, said second type treatment zone having therein steam injection means, heating means, and fan means coacting with said heating means and steam injection means for circulating a hot, moist process vapor in said treatment zone through said conveyor; said treatment chamber having a plurality of each said first and second types of treatment zones; and means in said chamber permitting one of said second type of treatment zones to establish and maintain a different temperature and moisture content level from the next adjacent treatment zone permitting variations in temperature and moisture ranges between adjacent treatment zones.

4,325,296

APPARATUS FOR ADJUSTING INTERNAL PRESSURE OF ASEPTIC STORAGE TANK

Nobuo Ukai, Machida; Akira Funado, Funabashi, and Tethuya Yokota, Mathudo, all of Japan, assignors to Kagome Co., Ltd., Aichi, Japan

Filed Sep. 7, 1979, Ser. No. 73,272
Claims priority, application Japan, Sep. 28, 1978, 53-118624
Int. Cl.³ A23B *7/00*
U.S. Cl. 99—468 **2 Claims**



1. Apparatus for maintaining an aseptic gaseous atmosphere in a storage tank for spoilable foodstuffs and the like comprising, a system connectable externally of said storage tank and having means for providing a gas flow path for connecting a container of an inert aseptic gas under pressure for supply of

said gas to said storage tank to supply an atmosphere of said gas in said storage tank comprising adjustable pressure-reducing valve means connectable in said same flow path to said gas container for receiving said gas and reducing it to a given pressure level to be maintained in the storage tank, a one-way valve connected in the system in said same flow path downstream of said pressure-reducing valve means to allow flow of said gas along a flow path in a direction toward said storage tank only, means in said system for connecting the one-way valve in said flow path to said tank, a single pressure-maintaining valve connected in said system between the storage tank and the one-way valve and in said flow path to maintain said pressure level in said storage tank in the event internal pressure in said storage tank rises independently of the gas under pressure supplied thereto and a microbiological filter connected in said flow path downstream of said pressure-maintaining valve and between it and said storage tank.

4,325,297

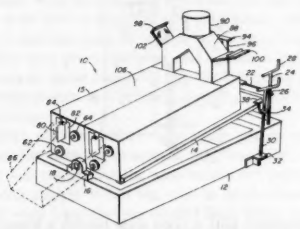
APPARATUS FOR BUFF BLANCHING PEANUTS

Lowell E. Weyant, Edenton, N.C., assignor to Seabrook Blanching Corporation, Edenton, N.C.

Continuation of Ser. No. 92,537, Nov. 8, 1979, abandoned, which is a continuation of Ser. No. 937,488, Aug. 28, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 241,793

Int. Cl.[3] A23N *7/00, 12/00*

U.S. Cl. 99—625 9 Claims



1. Apparatus for buff blanching shelled peanuts and the like, comprising

(a) an elongated housing having a feed end and a discharge end,

(b) a pair of rollers rotatably mounted in closely spaced, coextensive, parallel relation longitudinally within said housing between said ends, the gap between said rollers being less than the average size of shelled peanuts passing through said apparatus,

(c) the end of each of said rollers at the feed end of said apparatus defining smooth cylindrical outer surfaces the remaining portion of said rollers being covered with an abrasive grit stratum,

(d) power means connected to said rollers for rotating said rollers in the same rotary direction,

(e) means mounting said housing for angular adjustment thereof about at least two mutually perpendicular axes whereby the buff blanching action of peanuts flowing through said housing may be selectively controlled, one of said axes extending parallel to the axes of said rolls and the other axis being generally horizontal and intersecting said one axis, and,

(f) at least one longitudinal baffle mounted in a generally vertical plane to said housing in operative parallel relation to each of said rollers and generally tangential thereto and extending substantially the full length thereof to define a longitudinal channel parallel to said rollers for directing a flow of peanuts through said housing from one end of said rollers to the other,

(g) said rollers being mounted in offset relation to one another with the axis of one roller mounted to the side and above the axis of the other roller, the direction of rotation of said rollers being such that the top portion of the other and lowermost roller is towards the bottom portion of the one and uppermost roller,

(h) the lower edge of one of said baffles being disposed proximate to the other tangential portion of said other lowermost roller and the lower edge of the other of said baffles being disposed proximate to the inner tangential portion of said one uppermost roller, and

(i) guide means for directing peanuts fed into said feed end of said apparatus onto the top portion and smooth end of said other lowermost roller for flow along said channel.

4,325,298

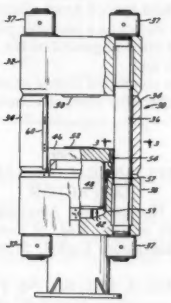
FRAME STRUCTURE FOR A PRESS ASSEMBLY

Philip T. Delmer, Shorewood, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 49,030, Jun. 18, 1979, Pat. No. 4,240,342. This application Dec. 19, 1980, Ser. No. 218,583

Int. Cl.[3] B30B *15/04*

U.S. Cl. 100—214 2 Claims



1. An assembly for high pressure compacting comprising:

(a) a frame structure including,

(1) an upper resistance member having a plurality of vertical passages therethrough spaced a predetermined horizontal distance apart,

(2) a lower resistance member vertically spaced below said upper resistance member and having a plurality of vertical passages therethrough spaced a predetermined horizontal distance apart, each said passage in said lower resistance member vertically aligned with a said passage in said upper resistance member,

(3) a plurality of vertically disposed tie rods, each extending through a said passage in said upper resistance member and an aligned said passage in said lower resistance member and under a predetermined stress in tension, the diameter of each said tie rod being substantially equal to the diameter of the respective upper or lower passage through which it extends, and the ends of each said tie rod having external threads about the circumference thereof,

(4) a plurality of washers, one of said washers mounted on each end of each said tie rod, each said washer having a flat outward surface with a diameter greater than the diameter of the respective said passage through said upper or lower resistance member which the tie rod on which said washer is mounted extends, a bore the diameter of which is substantially identical to the diameter of said tie rod it is mounted on, and an inward surface providing a flat central portion with straight, parallel side lines and a pair of outwardly tapered transverse portions, the width of said flat central portion being greater than the diameter of said respective passage, each said washer mounted on said tie rod with said flat central portion in contact with the outward surface of said respective upper or lower resistance member, and

said parallel side lines of said flat central portion substantially perpendicular to the line from the center of the respective said tie rod to the central vertical axis of said assembly between said plurality of tie rods in the plane of said outward surface of the respective said resistance member in contact with it,

(5) a plurality of vertical compression members, each spaced from one of said tie rods in a direction away from the outer facing surface thereof and having its upper surface in contact with the inward surface of said upper resistance member and its lower surface in contact with the inward surface of said lower resistance member under a predetermined compressive load,

(6) a plurality of nuts, each of said nuts rotatably affixed to one end of one said tie rod with the inward surface of said nut in contact with the outward surface of said one of said washers mounted on said end of its respective tie rod, and each said nut having a bore therethrough with internal threads therein complementary to said external threads on said end of its respective tie rod; whereby said nuts, washers, compression members and tie rods cooperate to secure said upper and lower resistance members in said spaced apart relationship;

(b) a force means including a movable platen located on said central vertical axis and guided on the inner facing surface of said tie rods; and

(c) moving means connected to one of said upper and lower resistance members for vertically moving said platen.

4,325,299

HOUSEHOLD APPLIANCE, ESPECIALLY A GARBAGE COMPACTOR

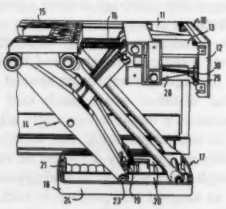
Karl-Heinz Färber, Giengen, and Alexander Rupp, Sontheim-Bergenweiler, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,874

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931537

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—295 **4 Claims**



1. Household garbage compactor, comprising press means for executing a piston stroke for given periods of time in a container holding garbage to be compacted, a pressure plate for compacting the garbage, means for easily releasably holding and re-attaching said pressure plate to said press means, said holding means being continuously accessible and manually actuatable from without the compactor when the compactor is in a closed and operational condition, said press means having an end facing toward said pressure plate, a support frame disposed on said end of said press means, said pressure plate having a surface facing said support frame, said holding means being in the form of a spring-loaded latch disposed on said surface of said pressure plate above the center of gravity thereof, a rod passing through the middle of said support frame and being engageable by said latch, said pressure plate being in the form of a press ram movable into an upper dead center position by said press means, a transfer mechanism for releasing said latch, a service panel having an opening to the outside of the compactor formed therein, and releasing means disposed in said service panel for manually activating said transfer mechanism from without the compactor through said opening to release said latch for removing said pressure plate in said upper dead center position.

4,325,300

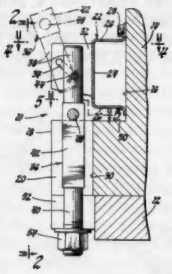
DIE CLAMP ARRANGEMENT

Joseph R. Fortier, New Baltimore, and John L. Klett, Howell, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1980, Ser. No. 206,554

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—295 **3 Claims**



1. In combination with a press slide having a lower horizontal face, an upper horizontal face and a vertical face, a die clamp arrangement for securing a die member beneath the lower horizontal face, comprising,

an elongated die attachment member having an upper end, a lower threaded end, and an intermediate portion,

means pivotally and slidably mounting the die attachment member to the press slide for movement between an attachment position wherein the die member hangs vertically with respect to the press slide with the lower threaded end beneath the lower horizontal face of the press slide for securing a die member thereto, and a self-stored position wherein the die attachment member is maintained in a position extending up and away from the vertical face of the press slide and free of the space beneath the lower horizontal face of the press slide to allow removal of the die member,

torque load distribution means cooperating between the intermediate portion of the die attachment member and the press slide to maintain the die attachment member non-rotatably and releasably with respect to the press slide and to distribute the torque loads resulting from attachment of the die member to the press slide,

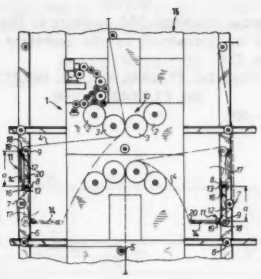
compressive load distribution means cooperating between the die attachment member and the upper horizontal face of the press slide to distribute to the press slide compressive loads on the die attachment member occurring from attachment of the die member thereto,

the torque and compressive load distributing means acting in cooperation with the press slide upon movement of the die attachment member into the attachment position such that said means become operative without additional action by the operator.

4,325,301
PAPER WEB SHIFTING APPARATUS

Heinrich K. Grosshauser, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer AG, Wurzburg, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 167,100
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932087
Int. Cl.[3] B41F *7/02, 13/54;* E04G *3/00*
U.S. Cl. 101—217 3 Claims



1. A paper web feed shifting apparatus for shifting the path of paper web feed through a web-feed rotary printing press between a normal path in which portions of the press are inaccessible to a press operator and a shifted path which affords access to those normally inaccessible press sections, the press having at least one printing couple, said shifting apparatus comprising:

a plurality of fixed paper web guide rollers serially positioned for rotation in spaced side frames of the printing press and contacting the web before the web is fed to the printing couple when the web is in the normal path of paper web feed, the one of said fixed guide rollers which is positioned nearest to the printing couple in the direction of paper web feed being rotatably carried on a rotatable shaft secured in the side frames of the press; and

a shiftable guide roller rotatably supported in first ends of spaced shifting bars, second ends of said spaced shifting bars being rigidly secured to said rotatable shaft for rotation therewith, said shifting bars being rotatable through an angle of about 180° to shift said shiftable guide roller and the paper web which is in contact with said shiftable guide roller between the normal and shifted paths whereby access to said normally inaccessible press sections is afforded the press operator by rotating said shifting bars to shift the web to the shifted path.

4,325,302
APPARATUS FOR PRINTING AND APPLYING PRESSURE SENSITIVE LABELS

Eugene W. Beers, Lafayette, Calif., assignor to Esselte Pendaflex Corp., Garden City, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,847
Int. Cl.[3] B41J *1/20*
U.S. Cl. 101—288 25 Claims

1. Apparatus for printing and applying pressure sensitive labels carried on a release liner of supporting material comprising:

a casing having a handle;

a manually engageable hand lever disposed at the handle;

an anvil mounted with respect to the frame;

a print head mounted with respect to the frame;

means for peeling printed labels from the release liner;

label applying means for applying the printed labels;

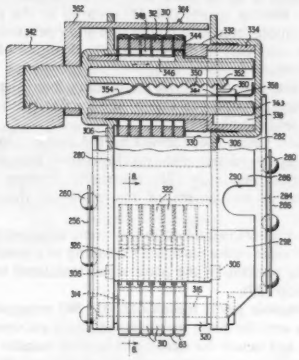
a feed wheel;

first ratchet teeth coupled to the feed wheel;

a first pawl cooperable with the first ratchet teeth to advance the feed wheel and the release liner;

second ratchet teeth coupled to the feed wheel;

a brake for engaging the labels carried on the release liner for preventing advancement of the release liner during application of the printed labels by said label applying means, said brake including a second pawl cooperable with the second ratchet teeth to remove the brake from the labels on the release liner; and

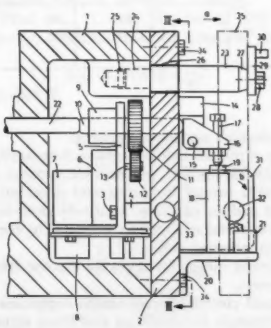


actuator means coupled to the hand lever for moving the print head to print a label and for thereafter moving the first pawl to advance the feed wheel and release liner and the second ratchet teeth, said second pawl being responsive to the movement of the second ratchet teeth to remove the brake from the labels on the release liner during advancement of the release liner.

4,325,303
PRINTING MACHINE INK DOCTOR BLADE ADJUSTMENT APPARATUS

Werner Rees, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,414
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938487
Int. Cl.[3] B41F *31/04;* B41L *27/06*
U.S. Cl. 101—365 9 Claims



1. In a printing machine, an attachment arrangement for power-positioned doctor blade adjustment apparatus having

a frame (1) supporting a plurality of doctor blade control pins (22);

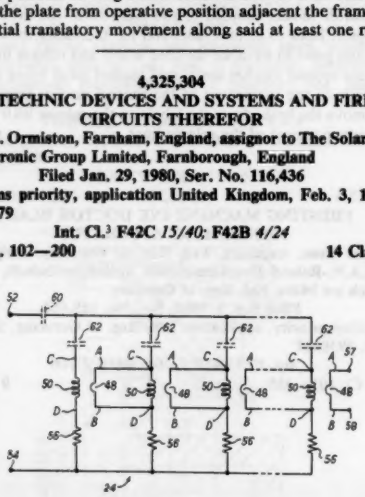
an elongated carrier plate (2) removably facing the frame at one side thereof;
motor means (7) and motion transfer means (6, 8–11) secured to the carrier plate at the side thereof facing the frame, in motion transfer relation to the doctor blade control pins (22);
and means for removably securing the carrier plate, with the motor means and the motion transfer means thereon, from operative connection on the frame while supporting the carrier plate thereon
comprising, in accordance with the invention,
position sensing means (14–21) secured to the plate at the side remote from said facing side and operatively coupled to the pins (22) to derive a feedback signal of actual pin position;
at least one support rail (23) extending from the frame in a direction beyond the side of the carrier plate (2) remote from said facing side;
suspension means (26) formed on the carrier plate and suspending the carrier plate on the at least one rail;
a releasable end stop (29) releasably limiting suspended translatory movement of the plate on the suspension means;
lateral wings (31) attached to the frame adjacent the narrow lateral sides of the plate and extending to a position matching the position of the plate when translated towards the end stop (29);
and releasable pivot means (32, 33, 36) engageable in the wings and the plate to permit pivoting movement of the plate, and hence the motor and motion transfer means and the position sensing means secured thereto after removal of the plate from operative position adjacent the frame by initial translatory movement along said at least one rail.

4,325,304

PYROTECHNIC DEVICES AND SYSTEMS AND FIRING CIRCUITS THEREFOR

Peter T. Ormiston, Farnham, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Jan. 29, 1980, Ser. No. 116,436
Claims priority, application United Kingdom, Feb. 3, 1979, 03866/79
Int. Cl.³ F42C *15/40*; F42B *4/24*
U.S. Cl. 102—200 **14 Claims**



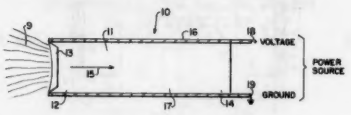
1. A pyrotechnic system comprising:
a plurality of pyrotechnic charges each including a principal, relatively fast-burning, pyrotechnic material, an electrically-operable primer for firing said principal pyrotechnic material and an auxiliary, relatively slow-burning, pyrotechnic material arranged to be ignited by the firing of said principal material; and
electric circuit means for applying electric firing signals to the primers;
wherein said electric circuit means comprises at least two input terminals for receiving said firing signals; the primers are connected in parallel circuit paths between said input terminals; the charges are arranged in a predetermined firing sequence in respective chambers in a common housing member; and each charge is associated with a respective rupturable conductor which is connected effectively to substantially short-circuit the primer of the next charge in the firing sequence and which is arranged to be ruptured by the burning of the auxilary pyrotechnic material only after said principal pyrotechnic material has been fired; whereby the firing of each of the second and subsequent charges in the firing sequence is enabled only after the preceding charge has been fired.

4,325,305

ELECTRICAL AUGMENTATION OF DETONATION WAVE

Donald J. Pastine, Highland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 17, 1980, Ser. No. 169,577
Int. Cl.³ F42C *19/00*
U.S. Cl. 102—201 **15 Claims**



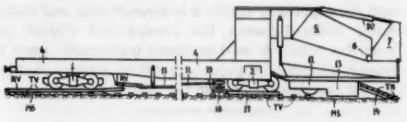
1. A device for increasing the energy from the detonation of an explosive, comprising:
an explosive charge; and
means adding energy to the detonation wave of the explosive charge;
whereby upon detonation of the explosive charge the detonation wave passes through the charge and the means adding energy increases the velocity and pressure of the detonation wave.

4,325,306

MACHINE FOR THE RENEWAL OF RAILWAY TRACKS

Sergio Valditerra, Novi Lugure, Italy, assignor to Canron Inc. (Montreal), Vaud, Switzerland

Filed Mar. 14, 1979, Ser. No. 20,274
Claims priority, application Italy, Mar. 15, 1978, 67562 A/78; Apr. 21, 1978, 67906 A/78
Int. Cl.³ E01B *29/05*
U.S. Cl. 104—2 **12 Claims**



1. A machine for the renewal of railway tracks adapted to effect at least the replacement of old sleepers with new sleepers comprising a front and rear frame connected by a swivel, said front frame resting on a front and middle bogie, with said rear frame resting on a rear bogie, said machine further including a means disposed between said front and middle bogies capable of removing the rails and a means, disposed between said middle and rear bogies, capable of removing old sleepers and replacing new sleepers and in addition, the relaying of the rails, and wherein said middle bogie is provided with a carriage means, said carriage means being defined by a sledge having a width and gauge identical to the width and gauge of the railway tracks, said sledge capable of sliding on said old sleepers, said carriage means enabling said middle bogie to move along said old sleepers in a direction parallel to the longitudinal axis of said railway tracks, said sleepers acting as a lateral guide means for said carriage means, said machine further including a dynamic means disposed close to said swivel and intercon-

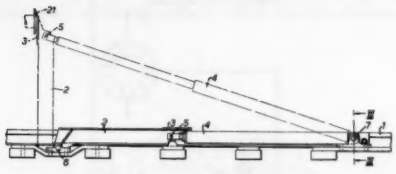
necting said front and rear frames, said dynamic means for imparting forces on both the front and rear bogies thereby reducing the load impinging on said middle bogie by transferring said load to both said front and rear bogies whereby the movement of said middle bogie and said carriage means along said old sleepers is facilitated.

4,325,307

BUFFER STOP

David E. Bick, Newent, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England

Filed May 5, 1980, Ser. No. 146,892
Claims priority, application United Kingdom, May 25, 1979, 18254/79
Int. Cl.³ B61K 7/18
U.S. Cl. 104—256 11 Claims



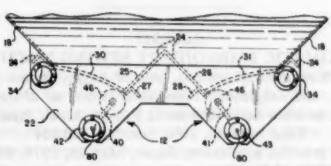
1. A buffer stop comprising an arm, capable of being pivotally-mounted at one end portion in the region of a railway track, and a piston-and-cylinder device adapted to act in one mode of operation as an energy-absorbing device and in another mode of operation as an extendible and contractible fluid-pressure-operable device, one end portion of said device being pivotally-connectible to the other end portion of the arm and the other end portion of said piston and-cylinder device being adapted for direct pivotal connection to structure fast with respect to the railway track at a distance away from said one end portion of the arm.

4,325,308

CONTROLLED-DISCHARGE DOOR FOR PARTICULATE MATERIALS AND LIQUIDS

Frank R. Erfurth, Boise, Id., assignor to Morrison-Knudsen Co., Inc., Boise, Id.

Filed Apr. 21, 1980, Ser. No. 141,996
Int. Cl.³ E01D 7/02, 7/18
U.S. Cl. 105—280 7 Claims



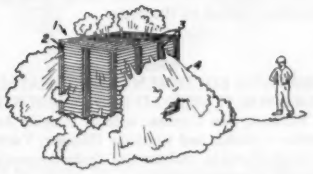
1. A controlled-discharge door assembly for controlling the discharge of particulate or liquid contents of a hopper car or the like, comprising:
a discharge opening in the car;
door supports depending from the discharge opening;
a discharge door having a concave configured outer surface pivotally mounted at one end to the door supports for movement between a closed position wherein the door closes the discharge opening and an open position for discharge of the contents of the car therethrough;
a lever pivotally mounted at one end to the door supports beneath the pivotal connection of the discharge door and intermediate the ends of the discharge door; and
a roller rotatably mounted to the lever and engaging the concave surface of the door intermediate its ends when the door is in its open position and movable along the curved surface of the door as the lever is moved about its pivotal connection, the roller having a diameter relative to the length of the lever arm such that a greater amount of force is applied against the door by the roller as the roller approaches the free end of the door opposite its pivotal connection to the door supports and as the door approaches its closed position, thereby permitting the door to be closed against the weight of the contents of the car being discharged through the discharge opening.

4,325,309

BLAST SUPPRESSIVE SHIELDING

Paul V. King, Joppatowne; Albert P. Becher, Fallston, and Wilmer P. Henderson, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 699,738, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned. This application Sep. 17, 1979, Ser. No. 75,770
Int. Cl.³ F41H 5/00; E05G 1/00
U.S. Cl. 109—49.5 15 Claims



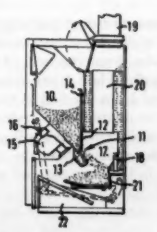
1. In a building with hazardous materials the improvement wherein said building includes at least one wall, ceiling or roof portion having a metal and gas venting shield comprising:
at least one perforated plate for overpressure attenuation means;
at least one metal louvered plate spaced from and adjacent to said perforated plate for slowing or confining debris;
fire confining and heat dissipating means in the form of at least one metal screen affixed to one of said plates.

4,325,310

BOILERS

Thomas A. Babbage, Walton-on-Thames, England, assignor to Trianco Redfyre Limited, Sheffield, England

Filed Aug. 11, 1980, Ser. No. 177,240
Claims priority, application United Kingdom, Aug. 13, 1979, 28143/79
Int. Cl.³ F23K 3/00
U.S. Cl. 110—101 R 6 Claims



1. A heating boiler comprising in combination:
a combustion chamber;

a hopper having a throat opening into one side of the combustion chamber at a level such that solid fuel pellets in said hopper flow out to form a firebed until the surface of the firebed slopes downwardly from said throat at the natural angle of repose of said fuel pellets;

a thermostatically controlled fan operable to cause primary air to flow through the firebed;

a support that slopes downwardly into the combustion chamber for an initial portion of the downward travel of the fuel pellets;

a regulator extending generally across said throat for controlling flow of fuel pellets from said hopper; and

means on said regulator for defining a localized thinning of the firebed so that the firebed is shallow at the localized region with respect to the thickness of the firebed adjacent said localized region, said means including a tongue mounted on said regulator, said tongue having a longitudinal area less than the cross-sectional area of said throat so that the tongue at least substantially prevents the flow of fuel pellets at one region of said throat downstream of said tongue so that a localized shallow region forms in the firebed through which breakthrough of primary air is facilitated and controlled while maintaining a thick edged firebed, said regulator being spaced from said support so that the effective throat, between the regulator and the support, is less than about 40 mm so that fuel pellets having sizes equal to or less than about 5/16 inch can be efficiently handled by the boiler.

4,325,311
METHOD AND EQUIPMENT FOR TREATMENT OF FUEL FOR FLUIDIZED BED COMBUSTION

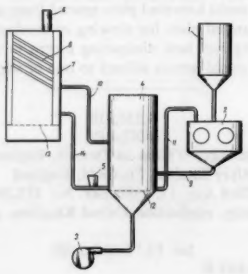
Jaroslav Beranek; Jan Cermak, both of Prague; Jaroslav Dobrozemsky, Uhliska, and Vratislav Fibinger, Vaclava Vacka, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed May 16, 1980, Ser. No. 150,317

Claims priority, application Czechoslovakia, May 17, 1979, 3424-79

Int. Cl.³ F22B *1/00*

U.S. Cl. 110—245 **2 Claims**



1. A method for treatment of particulate fuel for fluidized bed combustion in a fluidized bed combustor, comprising: removing hot particles from the bed of said combustor and passing same to a fluidized bed dryer, mixing the fuel with the hot particles removed from the bed of the fluidized bed combustor and, drying the mixture at a drying temperature in the fluidized bed dryer while introducing fluidization fluid to said dryer at a velocity not greater than the minimum fluidization velocity of particles in the fluidized bed combustor, removing particles from the fluidized bed in the dryer, charging the same to the fluidized bed combustor, removing particulate material which fluidizes at a fluidizing fluid velocity higher than the fluidizing fluid velocity in the fluidized bed dryer from the bottom of the bed in the fluidized bed dryer, and passing the same to a crusher wherein the particle size is reduced, and returning the particulate material having a reduced particle size to the fluidized bed dryer.

4,325,312
METHOD AND INSTALLATION OF INJECTION OF SOLID FUELS INTO A SHAFT FURNACE

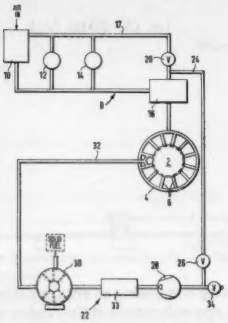
Leon Ulveling, Luxembourg, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Jul. 7, 1980, Ser. No. 166,618

Claims priority, application Luxembourg, Jul. 17, 1979, 81519

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **10 Claims**



1. A method for the injection of solid fuel into a shaft furnace, the furnace being provided with a common hot air supply conduit which is coupled to the interior thereof by means of a plurality of tuyere stocks, the furnace further including external means for producing heated air and a mixing station whereby the temperature of the heated air is reduced to a controlled level by mixture with relatively cold air, said method comprising the steps of:

diverting a portion of the cold air being delivered to the mixing station;

raising the pressure of the diverted air, the temperature of the air increasing with the increase in pressure;

entraining a pulverized solid fuel in the pressurized air to form a fuel/air mixture; and

injecting the fuel/air mixture into at least a first tuyere stock whereby the said fuel/air mixture is delivered into the furnace along with heated air discharged from the mixing station.

4,325,313
AUTOMATIC EMBROIDERY SEWING MACHINE

Taneichi Kawai; Kouji Nishida, both of Anjyo; Osamu Miyake, Toyota, and Shigemitsu Hamajima, Oobu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed May 15, 1980, Ser. No. 150,024

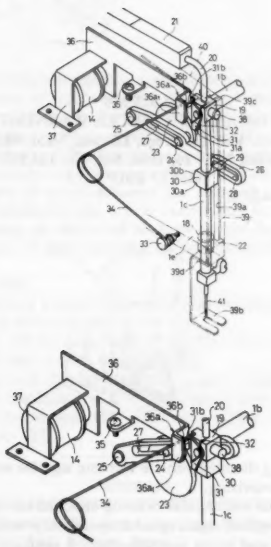
Claims priority, application Japan, May 21, 1979, 54/67896; Jun. 14, 1979, 54/75062

Int. Cl.³ D05C *5/04*

U.S. Cl. 112—103 **3 Claims**

1. An automatic embroidery sewing machine comprising an X-axis drive system, a Y-axis drive system, a support member coupled with said drive systems and supporting an embroidery frame, a needle bar and a needle bar drive system, an electromagnetic clutch mechanism for selectively coupling and uncoupling said needle bar with said needle bar drive system and an electronic control system for driving embroidery sewing data which represents an X-axis component and a Y-axis component of a stroke over which the embroidery frame is to be driven along the X-axis and the Y-axis respectively, said data being utilized in the X-axis and Y-axis drive systems, said control system rendering said electromagnetic clutch mecha-

nism in its operative condition for X and Y-axis components which are below respective given values and rendering the electromagnetic clutch mechanism inoperative until the termination of the positioning of the support member by the X and Y-axis drive systems whenever either component exceeds its associated given value, said electromagnetic clutch mechanism comprising a slider disposed in operative engagement with said needle bar drive system for imparting vertical reciprocatory motion to said slider, said slider being slidably mounted on said needle bar and having a bottom step portion, a latch member pivotally mounted on said needle bar at a point above said slider, said latch member having a laterally extending hook at one end adapted to engage said bottom step on said slider to operatively couple said needle bar to said slider and an oppositely extending lateral projection at the other end thereof, a spring angularly urging the latch member in a direction to be coupled with said slider, a resilient cam member having a cam surface formed on one end thereof and movable between a first position in which said cam surface is spaced from the latch member and a second position in which the cam surface engages part of the latch member, an electromagnetic assembly effective to drive the cam member from said first to said second position whenever energized wherein the electronic control system operates to maintain the electromagnetic assembly deenergized whenever both components of the stroke are below the given values and to energize the electromagnet assembly whenever either component of the stroke exceeds the associated given value and subsequently deenergizes it after the termination of the operation of the X and Y-axis drive system to position the support member for a stitch, said cam surface having a lower portion inclined downwardly away from said lateral projection on said latch member and an upper cam surface having a first vertically extending portion and a second inclined portion extending upwardly away from said lateral projection, said first and second portions being disposed side-by-side with said second inclined portion being offset to define an abutment surface between said first and second portions whereby upon energization of said electromagnet assembly when said needle bar is in its uppermost position, the abutment surface on said cam member will engage the end of said lateral projection on said latch member so that upon downward movement of said needle bar, said lateral projection will engage said second inclined portion of said cam surface to pivot said latch member out of engagement with said step portion on said slider to disengage said needle bar from said needle bar drive system.



4,325,314

THREAD CONTROL MECHANISM FOR SEWING MACHINES

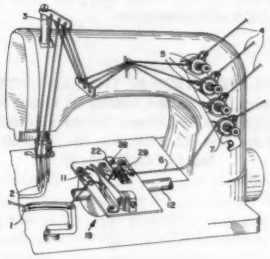
Wolfgang Niem, Leonberg, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,204

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914117

Int. Cl.³ D05B *1/10*

U.S. Cl. 112—199 **8 Claims**



2. Sewing apparatus including a machine having reciprocal thread carrying needle means, oscillatory rocking thread carrying looper means, rotary drive shaft means for moving said looper means in timed relation to said needle means so as to form a stitch, a supply of thread for said looper means and a thread control mechanism comprising:

means operable in timed relation with the movements of said looper means for intermittently clamping the thread passing to said looper means at a point located between said thread supply and said looper and effective to break said looper thread when it becomes entangled with said rotary drive shaft means.

4,325,315

METHOD FOR SEWING A MONOGRAM PATTERN

Peter J. Totino, North Bergen, and Alfonse N. Voza, Jersey City, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed May 11, 1981, Ser. No. 262,168

Int. Cl.³ D05B *3/02, 97/00*

U.S. Cl. 112—266.1 **4 Claims**

1. A method of operating a zig zag sewing machine to produce a visible pattern of zig zag stitches in a work fabric along a predetermined path to form a monogram within a defined field on the work fabric, comprising the steps of:

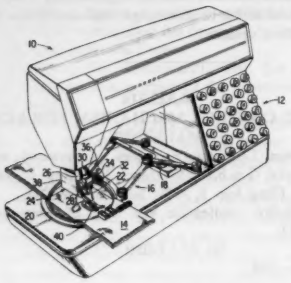
locating the defined field on the work fabric at a predetermined location and orientation with respect to the sewing machine;

unlatching the needle bar from the needle bar drive mechanism to prevent reciprocation of the needle bar;

feeding the work fabric in a selected longitudinal direction substantially perpendicular to the direction of lateral jogging movement of the needle bar to a point of intersection with said predetermined path;

latching the needle bar to the needle bar drive mechanism to allow reciprocation of the needle bar;

sewing a straight stitch along said predetermined path to a starting point for said monogram along said path; and



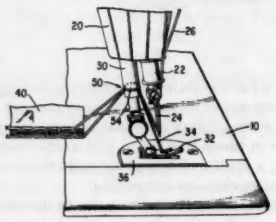
sewing zig zag stitches along said path from said starting point to form said monogram.

4,325,316

OMNI-DIRECTIONAL THREAD CUTTER

Robert B. Brauch, Wayne, and Martin W. Heine, Summit, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Nov. 12, 1980, Ser. No. 205,860
Int. Cl.³ D05B *65/00*
U.S. Cl. 112—292 **9 Claims**



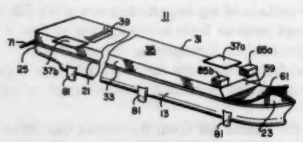
1. An omni-directional thread cutter in a sewing machine including a member having a substantially cylindrical shaped surface and an axis of generation of said cylindrical shaped surface, said surface having an annular cutting edge formed therein generally defining a plane which is substantially perpendicular to said axis of generation.

4,325,317

AIRCRAFT CARRIER

E. Burke Wilford, 840 Montgomery Ave., Bryn Mawr, Pa. 39046

Filed Nov. 8, 1979, Ser. No. 92,353
Int. Cl.³ B63B *35/035*
U.S. Cl. 114—261 **14 Claims**



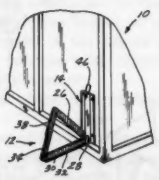
1. An aircraft carrier comprising a hull having propulsion means to propel said hull through a body of water, a main deck having service bays for aircraft disposed thereon, said main deck comprising a bow portion, and a stern portion, a hangar covering at least one of said portions, said hangar enclosing a work area occupying about 50 to 75 percent of the total area of said main deck, said work area including said service bays, said hangar comprising armored spaced-apart sidewalls, an armored roof member supported by said sidewalls and disposed substantially parallel to said main deck, said service bays being arranged in a predetermined sequence in assembly-line fashion, the upper surface of said roof member having a flat portion providing a takeoff and landing area for said aircraft, and elevator means between said upper roof surface and said main deck for transporting said aircraft therebetween; take-off assisting means for said aircraft disposed on said bow portion; said stern portion being provided with at least one ramp extending outwardly and downwardly therefrom, said ramp being adapted to be disposed at or below the surface of said body of water, whereby amphibious craft may traverse said ramp into said stern portion.

4,325,318

FOLDING DISABLED VEHICLE WARNING SYMBOL

John V. Kitrell, 4639 Holdrege, Lincoln, Nebr. 68503

Filed Mar. 26, 1980, Ser. No. 133,978
Int. Cl.³ E01F *9/10*
U.S. Cl. 116—28 R **8 Claims**



8. A folding disabled vehicle warning sign for attachment to a vehicle, comprising,

an elongated rectangular housing attached to the vehicle,

a first elongated sign segment operatively secured to said housing and being movable from a position within said housing to a position outwardly of said housing,

a second elongated sign segment pivotally secured at one of its ends to said first sign segment adjacent one end thereof,

a third elongated sign segment pivotally secured at one of its ends to the other end of said second sign segment,

a fourth elongated sign segment pivotally secured at one of its ends to the other end of said third sign segment and pivotally secured at its other end to the other end of said first sign segment,

said second, third and fourth sign segments being movable with said first sign segment,

said sign segments being movable from a superposed stored position within said housing to a warning position outwardly of said housing,

said sign segments, when in the said warning position, defining a triangular disabled vehicle warning symbol,

said housing having an open end to permit said sign segments to be moved from the stored position within said housing to said warning position, and

means on said first sign segment to close said housing open end when said segments are in their stored position.

4,325,319
AIR FLOW SYSTEM FOR THE CHARGING CONDUCTOR IN AN ELECTROSTATIC PAINTING SYSTEM

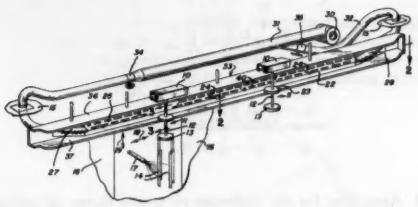
Thomas J. Richards, Peoria; Robert G. Smead, St. Charles, and Paul J. Staebler, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00047, §371 Date Jan. 18, 1980, §102(e) Date Jan. 18, 1980, PCT Pub. No. WO81/01967, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 18, 1980, Ser. No. 145,068

Int. Cl.³ B05B 5/02

U.S. Cl. 118—634 **15 Claims**



1. In an electrostatic painting system having a conveyor (10) with a plurality of article carriers (11) which pass through a coating zone and means for electrically charging articles as they pass through the coating zone (15, 16), including a charged conductor (22) extending along the path of travel of the article carriers and a charge collector (23) on each carrier having a path of travel adjacent the charged conductor to transfer a potential to the article carrier and to articles (14) carried thereby, an improved air flow system for preventing the deposition of paint particles on said charged conductor, comprising:

a blower (30);

means defining a plenum chamber (33) extending along the length of said charged conductor;

means (31, 32) for directing a flow of air from said blower through said plenum chamber; and

a perforate wall (25) between said plenum chamber and said charged conductor, a flow of air being directed through said perforate wall (25) outwardly across said charged conductor (22).

4,325,320
APPARATUS EMPLOYED IN SURFACE TREATMENT

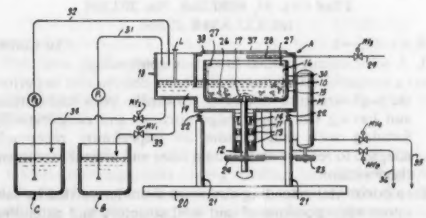
Atsushi Kirisawa, Aichi, Japan, assignor to Japan Envirotic Industry Co., Ltd., Nagoya, Japan

Division of Ser. No. 90,578, Nov. 2, 1979, Pat. No. 4,294,626. This application Jun. 13, 1980, Ser. No. 159,111

Claims priority, application Japan, Nov. 9, 1978, 53-138487

Int. Cl.³ B05C 3/04

U.S. Cl. 118—52 **1 Claim**



1. An apparatus employed in surface treatment which comprises a stationary vessel, an open top holed container rotatably mounted within said vessel, an open top cage adapted to be positioned within said container for rotation therewith, one or more washing nozzles fixed to said vessel at its upper part and adapted for treating or washing the contents of said cage within said container, and a supply tank attached to the outside of said vessel which connects with one or more tanks of treating liquid and/or washing liquid for supplying said treating liquid or washing liquid to said vessel through an aperture in said vessel.

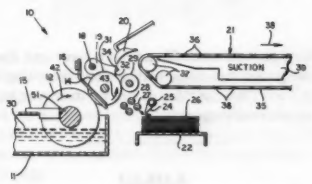
4,325,321
GLUE APPLICATOR

Paul Wahnschaff, 3202 Marjan Dr., Atlanta, Ga. 30340

Division of Ser. No. 111,528, Jan. 14, 1980, Pat. No. 4,263,869. This application Nov. 13, 1980, Ser. No. 206,438

Int. Cl.³ B05C 1/02

U.S. Cl. 118—245 **3 Claims**



1. In apparatus for applying glue and the like to sheet-like material comprising a glue pan for containing liquid glue, a glue wetting roll partially submerged in the glue in said glue pan, a glue applicator roll in parallel juxtaposition with respect to said glue wetting roll, means for rotating said glue wetting roll and said glue applicator roll whereby the glue wetting roll transfers glue from said glue pan to said glue applicator roll, feed means for moving sheet-like material into contact with said glue applicator roll, and pick means in sliding contact with said glue applicator roll for picking the sheet-like material off said glue applicator roll, the improvement therein of said glue applicator roll including a cylindrical metal core, end plugs inserted in the ends of said core and each end plug including a radially extending annular flange with a periphery of larger diameter than the outer surface of said core, an annular layer of hardened ceramic material formed on the outer annular surface of said core of a thickness to form an outer cylindrical surface which is coextensive with the outer annular surfaces of the annular flanges of said end plugs, and said pick means being positioned to contact only the ceramic coating of said glue applicator roll.

4,325,322
LIQUID APPLICATOR FOR TEXTILE YARNS

James B. Louch; William Postman, both of Anderson, S.C.; Thomas A. Ward, Lubbock, Tex., and Willis E. Cole, Anderson, S.C., assignors to Badische Corporation, Williamsburg, Va.

Filed Oct. 4, 1979, Ser. No. 81,705

Int. Cl.³ B05C 3/15

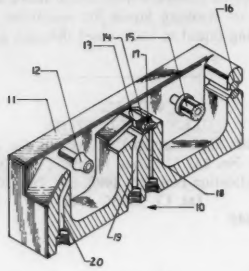
U.S. Cl. 118—410 **4 Claims**

1. A device for the application of a liquid treating composition uniformly over the width and along the length of a traveling textile yarn comprising a plurality of individual filaments, which device comprises:

(a) a liquid receptacle in the form of a chamber having a slit in one section thereof, the elongated sides of the slit being parallel straight lines substantially perpendicular to the path of the traveling textile yarn, the chamber communicating through another section thereof with means for the supply thereto of the liquid treating composition at a controlled rate; the slit having a minimum length equal to the total width of the traveling textile yarn when config-

ured in a close-packed monofilamentary layer; the slit having a width of between 0.001 and 0.01 inches; and

(b) guide means for configuring the traveling textile yarn in



a closed-packed monofilamentary layer and directing the so-configured traveling textile yarn over the slit and in contact with the chamber at a point downstream of the slit and in proximity thereto.

4,325,323

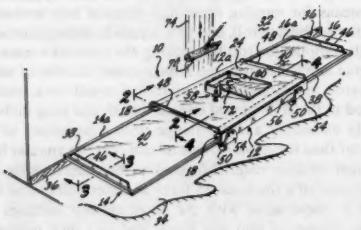
COLLAPSIBLE PAINT TRAY CARRIER AND PAINT SPATTER PROTECTOR

Jean P. Rioux, 6870 SW. 18 Ct., Pom Pano Beach, Fla. 33068

Filed Dec. 22, 1980, Ser. No. 218,545

Int. Cl.³ B05C *11/16*

U.S. Cl. 118—504 **7 Claims**



1. An apparatus for protecting a baseboard and floor adjacent a wall when applying a coating of a substance to the wall, comprising:

a horizontally extending rectangular central frame including a pair of E-shaped side pieces each defining upper and lower channels;

means for supporting the frame for movement along the floor; and

a pair of horizontally extending rectangular side panels having longitudinal edges, a first one of the side panels having its longitudinal edges slidably received in the upper channels of the E-shaped side pieces and a second one of the side panels having its longitudinal edges slidably received in the lower channels of the E-shaped side pieces, the side panels being slidably extensible from collapsed positions in which the side panels overlie each other to positions in which they extend from opposite ends of the central frame with only a small end portion of each side panel within the frame and with at least one set of longitudinal edges of the frame and side panels being aligned so that when they are positioned closely adjacent the wall, the frame and the side panels will shield the baseboard and the floor.

4,325,324

APPARATUS FOR STIFFENING TEXTILE SHEETS BY COATING WITH PLASTIC

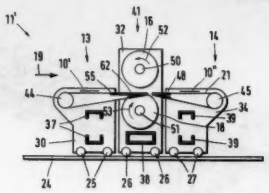
Martin Kannegiesser, Bad Salzuflen, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,727

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922613; Jun. 2, 1979, 7916050

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—642 **9 Claims**



1. Apparatus for the stiffening of textile sheets of various shapes for the manufacture of garments by coating with plastic, especially for the stiffening of such sheets for outer fabrics, said apparatus including a device for the coating of the textile sheets and a device for the subsequent heat treatment thereof, and a belt-shaped conveyor mechanism for the conveying of the textile sheets through said device, the coating device having a printing unit with a printing cylinder arranged above a pressure roller and the heat treatment device having a tunnel drier, the operating range of said printing unit being smaller than the operating width of said conveyor mechanism and said printing cylinder and said pressure roller being vertically arranged without a conveyor belt therebetween, the improvement wherein said conveyor mechanism is divided into at least first and second movable units couplable to said printing unit across the entire operating width in the area of said coating device transversely to a conveying direction of textile sheets in said conveyor mechanism, said first movable unit being arranged in front of said printing unit and having a first conveyor belt with a width corresponding to the length of said printing cylinder and a second conveyor belt longer than said first conveyor belt and having a width corresponding to the difference between the length of said printing cylinder and the operating width of said conveyor mechanism, said second movable unit having a third conveyor belt, said second conveyor belt leading in said conveying direction directly to said third conveyor belt, and said second movable unit being as wide as the sum of the widths of said first conveyor belt and said second conveyor belt.

4,325,325

SELF-CLEANING LITTER BOX

Wayne D. Larter, Box 405, Cruz Bay, St. John, V.I. 00830

Filed Oct. 31, 1980, Ser. No. 202,598

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **10 Claims**

1. A self-cleaning animal litter box comprising:

(a) a container having an imperforate bottom and imperforate wall structure extending upwardly from said bottom and having free upper edge portions and cooperatively forming with said bottom an imperforate receptacle adapted to receive and contain litter and animal excrement therewithin;

(b) a horizontal extending abutment shoulder carried by said upper edge portions of said wall structure and extending therealong;

(c) a separator constructed and arranged to be disposed in superimposed relation to said container and having a foraminous central portion spaced a substantial distance

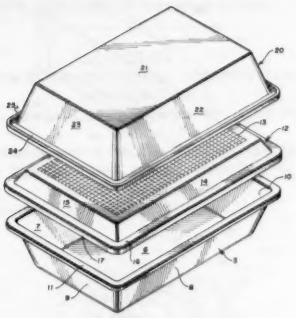
above said container and imperforate wall structure surrounding said central portion extending downwardly and outwardly therefrom and having lower peripheral portions;

(d) an abutment shoulder carried by said lower peripheral portions of said separator wall structure;

(e) said wall structure and said shoulder of said separator having such dimensions and being so constructed and arranged as to cause said separator shoulder to abut said container shoulder in flush sealing relation throughout their respective lengths when said separator is superimposed upon said container;

(f) means associated with said separator for holding said shoulders against lateral shifting movement relative to each other; and

(g) an inverted second container constructed and arranged to be superimposed upon said first mentioned container in non-telescoping relation and having an imperforate bottom and imperforate wall structure extending downwardly from said bottom and cooperatively forming therewith a second imperforate receptacle having lower edge portions;



(h) said second container having a horizontally extending abutment shoulder carried by said lower edge portions of its said wall structure and extending outwardly therealong, and being constructed and arranged to rest in abutting superimposed sealing relation along its length upon the upper surface of said separator shoulder, whereby any litter within said first container, upon inversion thereof as a unit with said separator and said second container so superimposed, will pass through said separator into said second container and will thereby be separated from any animal excrement which may have been deposited upon such litter within said first container, while said separator was not so disposed;

(i) the openings in said foraminous central portion of said separator being slightly larger than the granules of commercial kitty litter.

4,325,326

CAST GRATE, ESPECIALLY FOR PIG STABLES

Reinhard Schierenbeck, Böttcherei 171, 2803 Weyhe-Leeste, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 123,383

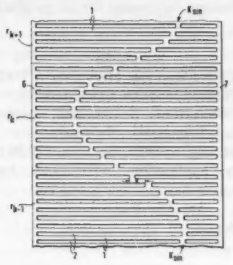
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906515

Int. Cl.³ A01K *1/01*

U.S. Cl. 119—28 **10 Claims**

1. Cast grate, especially for pig stables, consisting of parallel profile bars having tread surfaces with connecting end bars and stabilizing bridges along one or more bridge lines running transversely to the bars bridging the slit between adjacent bars, having the improvement comprising,

said bridges along bridge curves running angularly to the direction which is perpendicular to the bars with the result of displacements in a direction parallel to said bars of bridges across neighbouring slits with the width a of each bar within the range of substantially 11.5 mm to substantially 35 mm and the width b of each slit within the range of substantially 9 mm to 20 mm,



said bridge displacements being predominantly within the range of one third to twice the bar width a,

said tread surfaces and bridges having an incline towards the grate slits of about $\frac{1}{8}$ to 1/16 with convex upper shoulders contiguous with concave flanks for supporting the hoofs of little pigs.

4,325,327

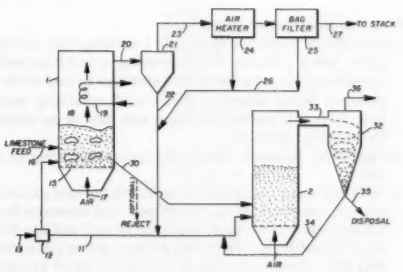
HYBRID FLUIDIZED BED COMBUSTER

Prabhudas P. Kantesaria, Windsor, and Francis T. Matthews, Poquonock, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 23, 1981, Ser. No. 237,183

Int. Cl.³ F22B *1/00*

U.S. Cl. 122—4 D **6 Claims**



1. A system for burning solid fuel, including,

a first furnace in which is supported a fluidized bed of crushed solid fuel and limestone,

a supply of crushed solid fuel,

means for separating the supply of crushed fuel into a predetermined coarse size and a predetermined fine size,

a conduit connected to the separating means and the first furnace to supply the first furnace with the crushed fuel of predetermined coarse size,

a second furnace,

a conduit connected to the separating means and the second furnace to supply the second furnace with crushed fuel of predetermined fine size,

means connected to the first furnace to supply combustion air at a velocity within the range of 6–12 ft./sec.,

means connected to the second furnace to supply combustion air at a velocity within the range of 15–35 ft./sec.,

means connected to the first furnace to supply crushed

limestone for absorption of sulfur compounds from the crushed fuel burned in the first furnace,

a conduit connected between the first and second furnaces for supplying the second furnace with incompletely utilized limestone drained from the first furnace,

and heat exchangers mounted in the furnaces to absorb their heat of combustion into water for the production of steam.

4,325,328

VAPOR GENERATOR HAVING A PAIR OF COMBUSTION CHAMBERS

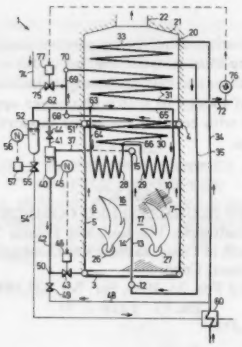
Pawel Miszak, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 6, 1980, Ser. No. 175,881

Claims priority, application Switzerland, Aug. 22, 1979, 7649/79

Int. Cl.³ F22B *37/00*

U.S. Cl. 122—6 A **7 Claims**



1. A vapor generator comprising

a plurality of interconnected tubes defining four enclosing walls and a partition for conveying a working medium threthrough in series from said partition to said walls, said partition being disposed within said enclosing walls to form two combustion chambers and having an outlet for the working medium;

a superheater disposed within said walls and having an inlet; and

a vapor separator connected to said outlet of said partition to receive working medium therefrom, said separator having a water outlet connected to an inlet of said walls to deliver working medium thereto and a vapor outlet connected to said inlet of said superheater to deliver vapor thereto.

4,325,329

METHOD AND APPARATUS FOR PRODUCING ALCOHOL AND AN ALCOHOL-PETROLEUM FUEL MIX

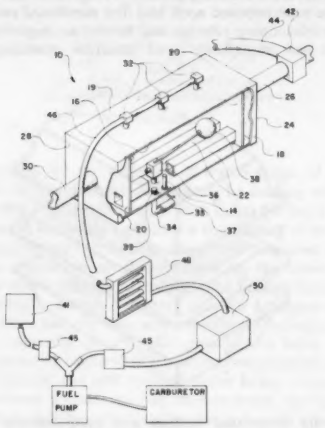
Thomas G. Taylor, Rte. 1, Box 136-A, Parkton, N.C. 28371

Filed May 5, 1980, Ser. No. 146,282

Int. Cl.³ F02B *43/08*

U.S. Cl. 123—3 **8 Claims**

1. An on board vehicle alcohol-petroleum fuel producing and blending fuel system for a vehicle having an engine and an exhaust system, and adapted to be mounted on and incorporated into said vehicle for producing and blending alcohol with conventional petroleum fuel to produce a combined alcohol-petroleum fuel composition for consumption and use by said vehicle, said system comprising: a boiler communicatively connected with and operatively associated with said engine and exhaust system for receiving heat from said engine while said vehicle is operating, and adapted to receive a fermented alcohol base solution and to heat the same with heat received from said engine and exhaust system to produce an alcohol vapor that upon condensing gives rise to liquid alcohol; said boiler including a chamber provided with inlet means for receiving said fermented alcohol base solution; heating tube means extending through said boiler and including inlet means operatively connected to the vehicle engine and exhaust system for allowing engine exhaust air to be directed through said heating tube means in heat exchange relationship with said chamber such that the fermented alcohol base solution contained therein may be heated and vaporized; vapor outlet means associated with said chamber for directing alcohol vapor therefrom as the same is generated by said boiler in response to the chamber being heated; condenser means for receiving said alcohol vapor and condensing the same to form



liquid alcohol; temperature control means for controlling the temperature of said boiler and including means to selectively meter the quantity of exhaust air that is directed through said boiler so as to effectively regulate the temperature within the chamber thereof; a conventional petroleum fuel tank provided with said vehicle that is adapted to contain conventional petroleum fuel; means associated with said conventional fuel tank for directing said petroleum fuel from said tank to a fuel mixing area; fuel mixing means operatively associated with said vehicle for mixing said produced liquid alcohol with said petroleum fuel for producing a combined alcohol-petroleum fuel composition; and means for directing said mixed alcohol-petroleum fuel composition to the vehicle engine for consumption.

4,325,330

APPARATUS FOR CONTROLLING THE COOLING SYSTEM OF A MOTOR-VEHICLE DRIVE

Artur Kugler, Hainhofen/near Augsburg, and Franz X. Zaunberger, Augsburg, both of Fed. Rep. of Germany, assignors to Firma Zahnräderfabrik Renk Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

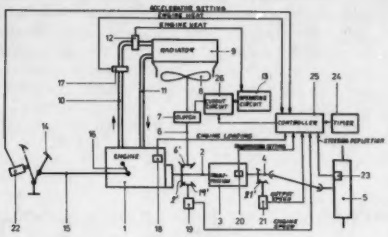
Continuation of Ser. No. 510,740, Sep. 30, 1974, abandoned. This application Jun. 6, 1979, Ser. No. 46,041

Int. Cl.³ F01P *7/08*

U.S. Cl. 123—41.12 **4 Claims**

1. In a vehicular drive wherein an internal-combustion engine is provided with cooling means for preventing overheating thereof, control means responsive to full depression of an accelerator pedal for deactivating said cooling means to enhance the power output of the engine, and heat-sensing means

for disabling said control means in the presence of engine temperatures exceeding a predetermined limit,

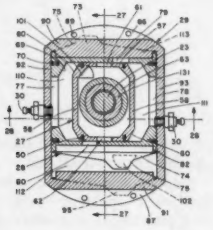


the combination therewith of a timer connected to said control means for limiting the deactivation of said cooling means to a predetermined maximum period.

4,325,331
DUAL-EXPANSION INTERNAL COMBUSTION CYCLE AND ENGINE

Frederick L. Erickson, 2610 Bosworth Dr., Fort Wayne, Ind. 46805

Continuation-in-part of Ser. No. 959,795, Nov. 13, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,135
Int. Cl.[3] F02B *59/00*
U.S. Cl. 123—42 8 Claims



1. A method of developing power mechanically through the combustion of a combustible fluid, comprising the steps of

(a) providing a source of a combustible fluid;

(b) providing a primary combustion/expansion chamber of controllable variable volume and a secondary expansion chamber of controllable variable volume in controllable fluid communication with said primary chamber;

(c) compressing within said primary chamber a predetermined amount of said combustible fluid by reducing the volume thereof to a minimum and igniting said combustible fluid as said volume approaches said minimum, and simultaneously forcing combustion gases to exhaust from said secondary chamber by reducing the volume thereof while maintaining said primary and secondary chambers isolated from each other;

(d) increasing the volume of said primary chamber to provide combustion gases under pressure and simultaneously reducing the volume of said secondary chamber to its minimum while said chambers remain isolated from each other;

(e) preliminarily expanding said combustion gases in said primary chamber by increasing its volume;

(f) continuing expanding said combustion gases in said primary chamber and increasing its volume, and simultaneously transferring said combustion gases into said secondary chamber and increasing its volume whereby there is provided a total expansion volume greater than the maximum volume of said primary chamber to give rise to a fluid pressure within said chambers below ambient pressure;

(g) continuing the transfer of said combustion gases into the secondary chamber so that further volumetric expansion of the sum of the volumes of the primary and secondary chambers causes pressure in said primary and secondary chambers to become subatmospheric pressure, thereby transferring exhaust gases into the secondary chamber while charging the primary chamber with the combustible fluid via suction caused by said subatmospheric pressure;

(h) decreasing the volume of said primary chamber while continuing said transferring of said combustion gases and simultaneously increasing the volume of said secondary chamber, and then closing off the flow of said combustible fluid into said primary chamber;

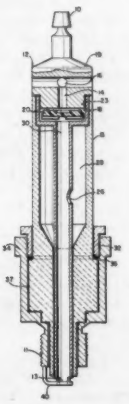
(i) continuing decreasing the volume of said primary chamber thereby beginning the compressing of said combustible fluid while simultaneously decreasing the volume of said secondary chamber and exhausting said combustion gases therefrom at approximately ambient pressure while maintaining said primary and secondary chambers isolated from each other, thereby providing the conditions required to repeat the cycle of steps (c)–(i); and

(j) employing the expansion of said combustion gases to deliver work.

4,325,332
AIR INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Charles A. Hukill, 808 Kewanna Ave., Pittsburgh, Pa. 15234

Filed Dec. 21, 1979, Ser. No. 106,420
Int. Cl.[3] F02P *13/00*; H01T *13/02*
U.S. Cl. 123—169 PA 11 Claims



1. An air injection system for a spark plug and the like, for injecting air into a combustion cylinder prior to compression, comprising:

air inlet means disposed in said plug, said inlet means including a valve means for metering air into said cylinder;

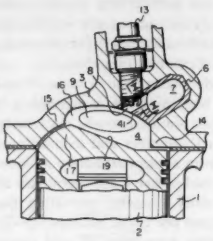
a tube connected to said valve means and extending therefrom through said plug, being in communication with said cylinder when said plug is mounted in an engine; and,

a compression chamber surrounding the tube, substantially occupying the interior of the plug, and in communication only with the tube, gases from prior combustions filling said chamber during exhaust strokes, whereby air and gases from prior combustions are injected into the cylinder prior to ignition, and back pressure shock on the valve means is substantially reduced.

4,325,333
INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN AUXILIARY COMBUSTION CHAMBER

Takashi Kato, Susono, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 39,905, May 17, 1979, abandoned. This application Aug. 6, 1980, Ser. No. 175,889
Claims priority, application Japan, Jul. 20, 1978, 53-87669
Int. Cl.³ F02B *19/18*; 123 *260;263;268;286;287;293;661*
U.S. Cl. 123—260 **12 Claims**

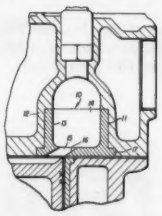


1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head having an inner wall mounted on said cylinder block and forming therein an auxiliary combustion chamber having a longitudinal axis;
a first raised portion downwardly projecting from the periphery of the inner wall of said cylinder head, having a horizontally flat bottom face and an approximately vertical side wall exposed to said main combustion chamber;
a piston reciprocally movable in said cylinder bore, having a top face which has a horizontally flat peripheral portion approachable to said flat bottom face so as to create a horizontally planar first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston;
a main combustion chamber defined by the inner wall of said cylinder head and the top face of said piston;
a single connecting passage of C-shaped transverse cross-section and uniform size for its entire length, having a projection formed on a lower wall thereof, said connecting passage being fluidly interposed between said main chamber and said auxiliary chamber and extending substantially parallel to said longitudinal axis, said single connecting passage being the only connecting passage between said main chamber and said auxiliary chamber, the transverse cross section of said connecting passage being taken on a plane normal to a longitudinal axis of said auxiliary chamber;
an intake valve movably mounted on said cylinder head;
an exhaust valve movably mounted on said cylinder head;
a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston, having a rear face and a front face exposed to said main combustion chamber;
a third raised portion formed on the inner wall of said cylinder head above said second raised portion, having a part-spherically shaped bottom wall, and a steeply inclined side wall spaced directly above and extending upwards from a ridge formed by the junction of said front and rear faces of said second raised portion, said rear face having a shape which is complementary to the shape of said part-spherical bottom wall, said rear face being approachable to said part-spherical bottom wall so as to create a part-spherical shell shaped second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said main combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said main combustion chamber; and
an intake passage in fluid communication with said main combustion chamber through said intake valve, having a carburetor equipped with a throttle valve, and swirl motion creating means arranged in said intake passage for creating a swirl motion rotating about an axis of said piston in said main combustion chamber, said swirl motion creating means comprising a helically shaped portion of said intake passage located in the vicinity of said intake valve.

4,325,334
PRECHAMBER CUP FOR AN INTERNAL COMBUSTION ENGINE

Katsutoshi Nishida; Syoji Okada, both of Yokohama; Akio Ando, Kawasaki, and Masato Sakai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1980, Ser. No. 131,279
Claims priority, application Japan, Aug. 2, 1979, 54-98096
Int. Cl.³ F02B *19/16, 19/18*
U.S. Cl. 123—270 **20 Claims**



1. A prechamber cup for insertion within a cylinder head, said cup formed of a ceramic material and including a surface finished exterior wall portion positioned within said cylinder head, a surface finished gas passage portion and a sintered non-surface finished interior wall portion forming a cup-shaped portion, said gas passage portion extending from said interior wall portion to said exterior wall portion.

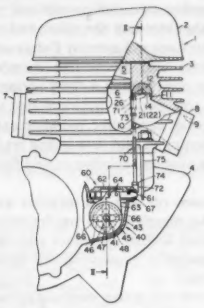
4,325,335
TWO STROKE ENGINE HAVING EXHAUST TIMING CONTROL VALVE MEANS

Hirotaka Shibata, Hamamatsu, Japan, assignor to Yamaha, Hatsudoki, Kabushiki, Kaisha, Japan

Filed May 27, 1980, Ser. No. 153,707
Claims priority, application Japan, May 29, 1979, 54-65592
Int. Cl.³ F02D *9/06*
U.S. Cl. 123—323 **3 Claims**

1. Two stroke engine comprising cylinder means, piston means which is received in said cylinder means for reciprocating movement, and crankshaft means connected with said piston means, said cylinder means having exhaust port timing control rotary valve means provided in said exhaust port means at the upper portion thereof, said valve means being rotatable on an axis parallel to the axis of rotation of the crankshaft means between a projected position wherein it is projected into the exhaust port means to thereby cover the upper portion of the exhaust port means and a retracted position wherein it is retracted from the exhaust port means, actuator means for moving said valve means between said projected and retracted positions in accordance with engine speed, said actuator means including driven shaft means extending parallelly with said crankshaft means, a centrifugal governor, said governor having a first disc secured to rotate with said driven shaft means and a second disc mounted to move along said driven

shaft means, at least one ball mounted between the first and second discs, spring means urging the second disc toward the first disc and said at least one ball, a cross shaft mounted for rotation on an axis normal to said driven shaft means, a bell-crank lever, one end of said lever attached to the cross shaft



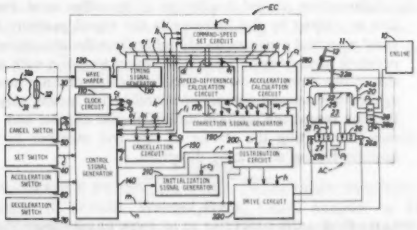
along the axis of rotation of the cross shaft, the other end of the bell-crank lever engaging said second disc and tie rod means linking said cross shaft and said rotatable exhaust valve means so that said valve means is moved toward the projected position in response to a decrease in the engine speed.

4,325,336

ELECTRONIC SPEED CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Akira Kuno, Oobu; Takeshi Matsui, and Yoshio Shinoda, both of Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 18, 1980, Ser. No. 170,088
Claims priority, application Japan, Jul. 20, 1979, 54-92754
Int. Cl.³ F02D *5/00*; B60K *31/00*
U.S. Cl. 123—350 **5 Claims**



1. A speed control system for an automotive vehicle driven by an internal combustion engine under control of a throttle valve, the control system comprising:

first means for producing a timing signal with a period of time responsive to the actual speed of the vehicle;

second means for producing a command signal indicative of a predetermined period of time defined by a desired speed of the vehicle;

third means responsive to the timing signal for calculating a first time difference between the predetermined period of time and the actual period of time of the timing signal and for producing a first difference signal indicative of an absolute value of the calculated first time difference and a first sign signal indicative of the positive or negative sign of the calculated first time difference;

fourth means responsive to the timing signal for calculating a second time difference between respective actual periods of time of the preceding and following timing signals and for producing a second difference signal indicative of an absolute value of the calculated second time differene and a second sign signal indicative of the positive or negative sign of the calculated second time difference;

fifth means for limiting a value of the second difference signal to a predetermined maximum value when the actual acceleration of the vehicle exceeds a maximum value;

sixth means responsive to the timing signal for calculating a sum of the absolute values when respective signs of the first and second sign signals are identical to each other and for calculating a difference between the absolute values when respective signs of the first and second sign signals are opposite to each other, said sixth means selectively producing first and second correction signals respectively indicative of the calculated sum and the calculated difference and ceasing to produce the first and second correction signals when the respective calculated values are zero;

seventh means responsive to the timing signal and one of the first and second correction signals for selectively producing first and second control signals respectively in relation to the positive and negative signs of the second sign signal; and

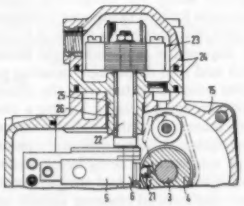
actuator means for decreasing and increasing the opening angle of said throttle valve respectively in response to the first and second control signals.

4,325,337

RPM GOVERNOR FOR A FUEL INJECTION PUMP

Franz Eheim, Stuttgart, and Gerald Höfer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,285
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845096
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—357 **2 Claims**



1. In an rpm governor for a fuel injection pump of an internal combustion engine which includes

a quantity adjustment means for determining the quantity of fuel injected, said quantity adjustment means being movable along a predetermined path between a first position at which a maximum quantity of fuel is injected and a second position at which a minimum quantity of fuel is injected,

a first shaft,

a governor lever means for positioning said quantity adjustment means, said governor lever means being pivotable about said first shaft and coupled to said quantity adjustment means,

an rpm adjuster means for exerting a force on said governor lever means proportional to the rpm of the internal combustion engine,

restoring force means for exerting a force on said governor lever means counter to the force exerted on said governor lever means by said rpm adjuster means, and

regulation intervention means, actuatable by an electronic control device which processes at least one engine parameter, for varying the setting of said rpm governor,

the improvement wherein said regulation intervention

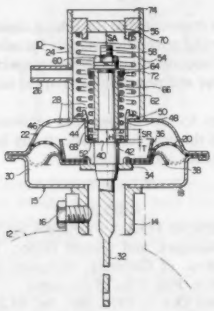
means comprises an electromagnet coupled to said first shaft and said first shaft is movable by said electromagnet along a path orthogonal to the axis of said first shaft to vary the setting of said rpm governor.

4,325,338

PRESSURE-RESPONSIVE IGNITION TIMING CONTROLLER FOR A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Hiroshi Fujiwara; Kazutoshi Kobayashi, and Shinichi Miyo, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,269
Claims priority, application Japan, Jul. 25, 1979, 54-93736
Int. Cl.³ F02P 5/04
U.S. Cl. 123—407 **10 Claims**



1. A pressure-responsive ignition timing controller for a supercharged internal combustion engine having a distributor with an ignition signal generating means, comprising:

a diaphragm housing comprising first and second parts secured together along the peripheral edges thereof and having end walls formed therein with substantially coaxial openings, said first part being secured to said distributor;

a diaphragm disposed in said diaphragm housing and cooperative with said first diaphragm housing part to define a first chamber communicated with the atmosphere;

a generally tubular spring casing having a closed outer end and an open inner end with a radially inwardly extending first annular flange defining a central opening therein, the inner end of said spring casing being secured in air-tight manner to the end wall of said second diaphragm housing part so that said central opening in said spring casing is substantially coaxial with the opening in said second diaphragm housing part;

said second diaphragm housing part, said diaphragm and said spring casing cooperating together to define a second chamber pneumatically connected to the intake passage of said engine adjacent to the engine throttle valve so that a signal pressure is applied to said diaphragm;

an elongated rod member axially extending through said diaphragm housing and said spring casing and operatively associated at one end with said ignition signal generating means, said rod member being secured at an intermediate portion to said diaphragm so that said rod is axially movable with said diaphragm when the same is axially deformed by the pressure change in said second chamber, the other end of said rod being disposed in said spring casing, said rod member having an annular shoulder formed thereon between said diaphragm and the other end of said rod and directed toward said other end;

a first spring retainer means mounted in said spring casing adjacent to the inner end thereof and having a radially outwardly extending first annular section and a radially inwardly extending second annular section defining therein a central opening substantially coaxial with the opening in said inner end of said spring casing, said first spring retainer means being axially movable relative to said spring casing so that said first annular section of said first spring retainer means is moved into and out of engagement with said first flange;

a second spring retainer means mounted in said spring casing adjacent to said closed outer end thereof;

a sleeve-like member mounted on said rod member between said annular shoulder and the other end of said rod member and having a second annular flange extending radially outwardly from said sleeve-like member, said second annular flange constituting a third spring retainer means;

the part of said rod member between said shoulder and the inner end of said sleeve-like member extending through the central opening in said first spring retainer means for a limited axial movement relative to said first spring retainer means;

a positioning means on said rod member axially supporting said sleeve-like member at a predetermined position on said rod member so that the inner end of said sleeve-like member is spaced a predetermined distance from said annular shoulder;

a first compression coil spring means disposed in said spring casing and extending between said first annular section of said first spring retainer means and said second spring retainer means and biasing said first annular section of said first spring retainer means toward said first flange of said spring casing;

a second compression coil spring means disposed in said spring casing substantially coaxially with said first compression coil spring means and extending between said second annular section of said first spring retainer means and said second annular flange on said sleeve-like member and biasing said sleeve-like member away from said first spring retainer means;

the deformation of said diaphragm in one axial direction as caused by the decrease in the signal pressure beyond a first pressure level lower than the atmospheric pressure level causing said rod member to move with said first spring retainer means toward the closed outer end of said spring casing against said first compression coil spring means only to thereby advance the ignition timing of said engine;

the deformation of said diaphragm in the other axial direction as caused by the increase in the signal pressure beyond a second pressure level higher than the atmospheric pressure level causing said rod member to move with said sleeve-like member toward said first spring retainer means against said second compression coil spring means only to thereby retard the ignition timing of said engine; and

means for limiting the stroke of said rod member in the ignition-timing advancing direction.

4,325,339

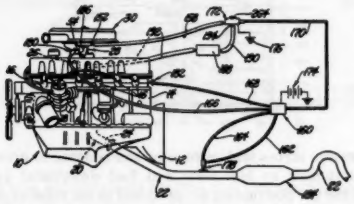
APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Kenneth C. Bier, Bloomfield Hills, and Robert J. Miller, Warren, both of Mich., assignors to Colt Industries Operating Corp, New York, N.Y.

Continuation of Ser. No. 924,173, Jul. 13, 1978, abandoned, which is a division of Ser. No. 684,547, May 10, 1976, Pat. No. 4,135,482. This application Nov. 30, 1978, Ser. No. 964,838
Int. Cl.³ F02M 7/16
U.S. Cl. 123—440 **44 Claims**

1. A carburetor for a combustion engine, comprising carburetor body means, induction passage means formed in said body means, variably positionable throttle valve means for controlling the rate of motive fluid through said induction passage means and into said engine, fuel reservoir chamber means formed in said body means, idle fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage means, main fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage

means, said idle fuel metering system means comprising first modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered idle fuel flow through said idle fuel metering system means to said induction passage means, said main fuel metering system means comprising second modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered main fuel flow through said main fuel metering system means to said induction passage means, first fluid pressure responsive motor means carried by said body means and operatively connected to said first modulating valve means, said first fluid pressure responsive motor means comprising first chamber means and first pressure responsive movable wall means, said first pressure responsive wall means being effective



to variably position said first modulating valve means in response to the magnitude of an actuating fluid pressure applied to said first pressure responsive wall means, and second fluid pressure responsive motor means carried by said body means and operatively connected to said second modulating valve means, said second fluid pressure responsive motor means comprising second chamber means and second pressure responsive movable wall means, said second pressure responsive movable wall means being effective to variably position said second modulating valve means in response to the magnitude of an actuating fluid pressure applied to said second pressure responsive wall means, said first and second chamber means being effective for receiving actuating fluid pressure and in turn causing said actuating fluid pressure to be applied to said first and second pressure responsive wall means.

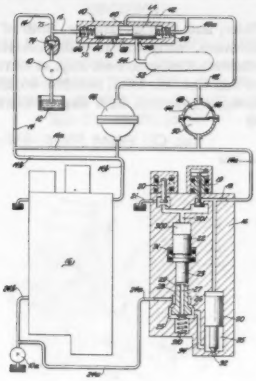
4,325,340

VARIABLE PRESSURE FUEL INJECTION SYSTEM

Cormac G. O'Neill, Walnut Creek, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,387
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—447 **6 Claims**

1. An engine fuel injector system comprising a liquid fuel pump constructed to produce a variable delivery pressure in the pump output line; individual electrically-programmed fuel injectors connected to the pump output line for delivering fuel pulses to the engine combustion chambers; a gas pressure source; a hollow accumulator having a membrane therein subdividing the accumulator volume into a gas chamber and a fuel chamber; valve means alternately communicating the accumulator gas chamber with the gas pressure source or atmosphere, said valve means normally occupying a centered position wherein the gas chamber is isolated from both the gas pressure source and the atmosphere; a first operator connection **(15)** between the fuel pump output and the valve means for biasing the valve means toward a position in which the gas pressure source acts to pressurize the accumulator gas chamber; and a second operator connection **(42*a*)** between the gas chamber and the valve means for biasing the valve means



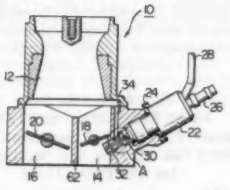
toward a position in which the gas chamber is vented to atmosphere.

4,325,341

FUEL CONTROL DEVICE FOR FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Teruo Yamauchi; Yoshishige Oyama, both of Katsuta, and Mamoru Fujieda, Ibaraki all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,459
Claims priority, application Japan, Nov. 6, 1978, 53-135785
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—472 **14 Claims**



1. A fuel control device for a fuel injection system of a type having an intake passage adapted for supply air into an internal combustion engine and a fuel injector adapted for intermittently injecting a fuel into the intake air flowing through said intake air passage, said fuel control device comprising: a porous tubular element defining therein a passage opened at its both ends, said porous tubular element being disposed between a discharge orifice of said fuel injector and said intake passage such that the most part of the fuel injected through said discharge orifice of said fuel injector is made to collide with and adhere to an inner peripheral surface of said porous tubular element; and means for supplying air from a space around said porous tubular element into said passage in said porous tubular element through a wall of said porous tubular element to thereby form an air-fuel mixture in said passage in said porous tubular element.

4,325,342
FUEL INJECTION PUMP CONTROL FOR INTERNAL COMBUSTION ENGINES, ESPECIALLY DIESEL ENGINES

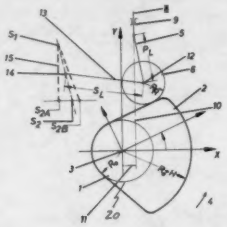
Wolfgang Köhler, and Karl E. Hafner, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,257

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845659

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—504 **9 Claims**



1. A fuel injection pump control for internal combustion engines having a camshaft, comprising in combination:

a cam mounted on said camshaft, said cam having a base circle;

a pump piston actuatable in response to the motion of said cam so that the fuel delivery volume is controlled by varying the effective stroke of said pump piston, with the longitudinal central axis of said pump piston being arranged in the plane of rotation of said cam and removed eccentrically a predetermined distance from that perpendicular line in said plane which passes through the axis of rotation of said camshaft;

a cam follower roller, said roller being movable in response to rotation of said cam when in contact therewith;

shaft means for rotatably mounting said cam follower roller with one end thereof and the other end being pivotally connected to said pump piston; and

a lever having a first end operatively connectible to at least one of the group consisting of said cam follower roller and said shaft means, said lever also having a second end which is adjustably positioned only within a predetermined area, said predetermined area having substantially the shape of a planar triangle.

4,325,343
FUEL METERING SYSTEM

William F. Turner, P.O. Box 732, Sanderson, Tex. 79484

Filed Feb. 14, 1980, Ser. No. 121,407

Int. Cl.³ F02M *21/04*

U.S. Cl. 123—527 **11 Claims**

1. In a fuel metering system having:

a. an engine;

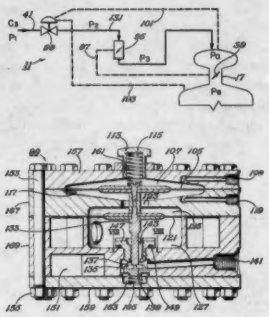
b. a carburetor means for controlling speed and power of said engine;

c. at least one fluid fuel supply at super atmospheric pressure and a fuel supply means and lines for supplying fuel to said carburetor; and,

d. a throttle means having a butterfly valve means in said carburetor for altering the controlled speed and power attained by said carburetor; the improvement comprising:

e. a fuel pressure regulator interposed in said fuel supply lines and responsively connected with said fuel supply line downstream thereof for regulating the pressure in creating a constant pressure fuel in said supply line downstream of said fuel pressure regulator;

f. first and second means for regulating the flow of said constant pressure fuel so as to maintain a substantially constant fuel-air ratio being fed to said engine regardless of the carburetor demand signal; said first and second means being connected with said fuel supply line downstream from said fuel pressure regulator and upstream of said carburetor; said first and second means being operationally connected so as to sense the position of said butterfly valve means of said throttle means and a differential



pressure across said carburetor and adapted to provide an obstruction to fuel flow and fuel differential pressure across the obstruction proportional to the relative position of the butterfly valve means and the differential pressure thereacross; such that a substantially constant fuel-air ratio is maintained.

4,325,344
FUEL EVAPORATOR

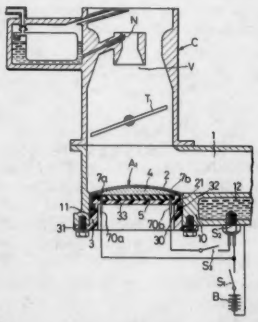
Toshihiko Igashira, Toyokawa; Naoki Umeda, Nagoya, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 30, 1980, Ser. No. 155,014

Claims priority, application Japan, Jun. 5, 1979, 54-70287; Jun. 8, 1979, 54-72477; Apr. 28, 1980, 55-56822

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **10 Claims**



1. A fuel evaporator for use in a fuel entry system of an internal combustion engine comprising:

a heating element which is made of ceramics and has a positive temperature coefficient of resistance, the resistance of said heating element suddenly increasing at a specific temperature;

a covering plate which is made of a material having high thermal conductivity and covers said heating element to be contacted with fuel droplets falling within an intake gas supplying passage of said fuel entry system of said engine; and

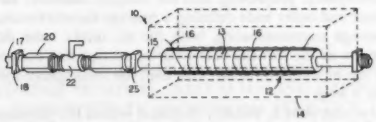
a connecting means for electrically connecting said heating

element to an electric power source; said connecting means being composed of two electrifying routes and provided with a switching means which operates corresponding to the driving condition of said engine to connect said two electrifying routes in parallel or in series or break one of said two electrifying routes from said electric power source, selectively.

4,325,345
GASOLINE FUEL VAPORIZATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Robert S. Wilkinson, P. O. Box 61, Newfield, Me. 04095, and Alan S. Lowe, Kennebunk, Me., assignors to Robert S. Wilkinson, Newfield, Me.

Filed Sep. 4, 1979, Ser. No. 71,839
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **33 Claims**



1. A new and improved gasoline fuel vaporization and delivery system for vaporization of gasoline from the fuel line of an internal combustion engine and for delivery of fuel in the vapor state to a conventional carburetor or into an airstream at the intake manifold of the internal combustion engine, said engine having an associated electrical power supply comprising:

an elongate vaporization chamber comprised of a tubular length of metal covered with a high temperature resistant, high thermal conductivity electrically insulating material, a heating coil of resistance wire wrapped in a helix around the electrically insulating material, and a coating of high temperature refractory material coated over the heating coil and chamber, said vaporization chamber formed with an inlet end for receiving liquid gasoline guel from the fuel line of the engine and an outlet end for delivering vaporized fuel;

said resistance wire heating coil comprised of a high temperature durable alloy having a resistance per unit length and overall length selected to generate heat at a temperature above the vaporization temperature of the gasoline fuel fractions or constituents but below the flash point temperature of such fuel constituents, when said coil is coupled to the electrical power supply voltage for the internal combustion engine, whereby the resistance wire heating coil at the applicable voltage of the power supply is self limiting in temperature output attained in the vaporization chamber to a level at a safe margin below the flash point of gasoline fractions;

high temperature durable lead wires coupled to the ends of the heating coil, said high temperature lead wires having a lower electrical resistance than the heating coil resistance wire, the couplings between the ends of the heating coil and the high temperature lead wires also being of the type durable at high temperature;

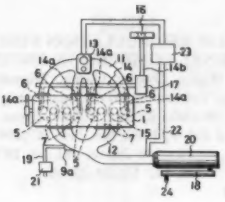
a housing enclosing the vaporization chamber and also enclosing the couplings of high temperature durable lead wires to the ends of the heating coil;

the ends of the high temperature lead wires opposite the couplings located outside the vaporization chamber housing enclosure for coupling to power supply lead wire; and valve means to control the flow of gasoline fuel into the chamber including a restricted delivery orifice at the inlet end to fragment the liquid fuel as it enters the chamber and thereby facilitate vaporization, said restricted delivery orifice oriented to deliver fuel in a direction off axis from the elongate axis of the vaporization chamber thereby increasing the travel time of fuel in the chamber for complete vaporization.

4,325,346
FOUR-CYCLE INTERNAL COMBUSTION ENGINE

Hiroshi Yokoyama, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Hamana, Japan

Filed Sep. 5, 1980, Ser. No. 184,346
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **13 Claims**



1. Four-cycle internal combustion engine which permits recirculation of exhaust gas to the combustion chamber, comprising:

a main suction path extending from the carburetor to the combustion chamber and opening into said combustion chamber, said main suction path being designed such that the mixed gas passing through said main suction path may develop a swirl in said combustion chamber;

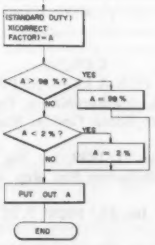
a sub-suction path having a less wide effective opening area than said main suction path and having its outlet directed in tangential direction of the side wall of said combustion chamber so that the swirl generated in said main suction path may be promoted;

and a control device to control the gas volume flowing in said sub-suction path in such a way as reduce the effective opening area of said sub suction-path at least in time of idling.

4,325,347
METHOD OF CONTROLLING FLUID FLOW RATE USING ON-OFF TYPE ELECTROMAGNETIC VALVE

Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 20, 1980, Ser. No. 132,297
Claims priority, application Japan, Mar. 29, 1979, 54-37543
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **9 Claims**



1. In a method of controlling the rate of flow of a fluid by operating an electromagnetic flow control valve of the on-off functioning type with a constant frequency pulse signal and regulating the duty of the pulse signal thereby regulating the

proportion of the duration of the open state and duration of the closed state of the electromagnetic valve,

the improvement comprising the minimum value of the duty of said pulse signal for minimizing, or maximizing, said rate of flow being made to be a predetermined definite value greater than 0% but not greater than a first critical value which is slightly greater than 0%, and the maximum value of the duty of said pulse signal for maximizing, or minimizing, said rate of flow being made to be a predetermined definite value smaller than 100% but not smaller than a second critical value which is slightly smaller than 100%.

4,325,348

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

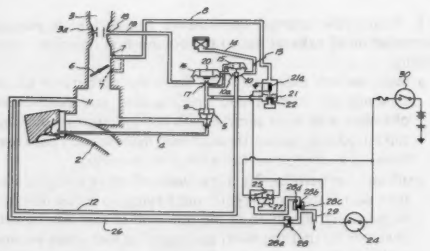
Yoshiharu Abe, Wako; Osamu Gotoh, Higashikurume, and Akinobu Takagi, Yokohama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 167,396

Claims priority, application Japan, Jul. 16, 1979, 54-89247

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—571 **4 Claims**



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, the intake passage having a throttle valve and having a Venturi portion, the combination of: an exhaust passage for carrying exhaust gases from the engine, means including a passageway connecting said exhaust passage to said intake passage downstream from said throttle valve for recirculating exhaust gases into the engine, a first control valve in said passageway, an air conduit connecting said intake passage to atmosphere, a second control valve in said air conduit, each of said control valves having a vacuum-responsive actuator, an electrically operated valve for venting to atmosphere the actuator for the first control valve, means responsive to an engine operating condition for actuating said electrically operated valve, and a regulating valve for controlling vacuum intensity in the actuator for each said control valve, said regulating valve being responsive to differential vacuum pressure between vacuum pressure in said Venturi portion and vacuum pressure in said air conduit.

4,325,349

AIR VALVE FOR A FUEL SUPPLY SYSTEM

Siegfried Fehrenbach, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,620

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933589

Int. Cl.³ F02M *7/12*

U.S. Cl. 123—587 **3 Claims**

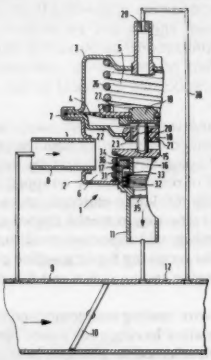
1. In a fuel supply system of an internal combustion engine having an air intake tube, an arbitrarily actuatable throttle valve disposed in the air intake tube, and a throttle valve bypass connecting the air intake tube upstream of the throttle valve to the air intake tube downstream of the throttle valve, an air valve means, connected via an underpressure line to the air intake tube downstream of the throttle valve, for varying the cross-sectional area of the throttle valve bypass in accordance with a differential air pressure between the pressure of air within the air intake tube upstream of the throttle valve and the pressure of air within the air intake tube downstream of the throttle valve, the throttle valve bypass comprising the air valve means, a first line connected between the air valve means and the air intake tube upstream of the throttle valve, and a second line connected between the air valve means and the air intake tube downstream of the throttle valve, and the air valve means comprising:

a housing;

a diaphragm which divides the housing into a first chamber and a second chamber, the first chamber communicating with the air intake tube downstream of the throttle valve via the underpressure line, and the second chamber communicating with the air intake tube upstream of the throttle valve via the first line;

a mouthpiece, projecting into the second chamber, having inner and outer ends defining a passage therebetween, the passage communicating with the air intake tube downstream of the throttle valve via the second line connected to the mouthpiece at its outer end, the mouthpiece including a stop;

a valve seat sheath, slidably disposed within the mouthpiece passage for movement in a first direction inwardly toward



the diaphragm or in an opposite second direction outwardly from the diaphragm, the valve seat sheath and the mouthpiece defining a flow cross section therebetween connecting the second chamber with the second line, the valve seat sheath including a sealing step which engages the mouthpiece stop to close the flow cross section and determine the innermost position of the valve seat sheath;

a starting spring means for exerting a force on the valve seat sheath in the first direction;

a movable valve element, disposed in the second chamber and engaging the diaphragm, the valve element and the valve seat sheath defining a valve passage therebetween connecting the second chamber with the second line, the valve element being movable in the second direction to a closed position at which it engages the valve seat sheath and closes the valve passage and the valve element being movable in the first direction from its closed position to reopen the valve passage;

first valve spring means for exerting a force on the diaphragm and valve element in the first direction; and

second valve spring means for exerting a force on the diaphragm and valve element in the second direction;

wherein the starting spring means, the first valve spring means and the second valve spring means are selected so that (1) when the air differential pressure is less than a first predetermined value indicating a non-running or starting

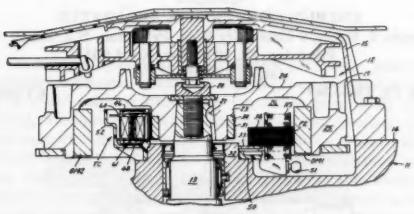
condition of the engine, the valve element and valve seat sheath are disposed such that the flow cross section is open and the valve passage closed, (2) when the air differential pressure is at least equal to the first predetermined value but less than a second predetermined value, the valve element and valve seat sheath are disposed such that both the flow cross section and the valve passage are closed, and (3) when the air differential pressure is at least equal to the second predetermined value indicating an engine overrunning condition, the valve element and valve seat sheath are disposed such that the flow cross section is closed and the valve passage is open.

4,325,350

ALTERNATOR-POWERED BREAKERLESS CAPACITOR DISCHARGE IGNITION SYSTEM HAVING IMPROVED LOW-SPEED TIMING CHARACTERISTICS

Michael E. Bauer, and Richard L. Sleder, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Nov. 28, 1979, Ser. No. 98,070
Int. Cl.³ F02P *1/02*
U.S. Cl. 123—605 **5 Claims**



1. A breakerless capacitor discharge ignition system for an internal combustion engine, said ignition system comprising:

(A) an ignition coil means;

(B) a capacitor means for energizing said ignition coil means;

(C) an alternator for providing electrical power pulses to said capacitor means and for producing electrical trigger pulses, said alternator including:

(1) a rotor driven by said engine, said rotor having an inner cylindrical surface, an outer cylindrical surface, and a surface connecting said cylindrical surfaces, a first magnet means mounted on said outer surface, and a second magnet means mounted on said inner surface, said second magnet means including a first portion which is radially polarized with a first polarity, a second portion which is radially polarized with a second polarity opposite to said first polarity, and neutral zones therebetween; and

(2) a stator assembly having a charging coil means cooperable with said first magnet means to produce said power pulses and a trigger coil means cooperable with said second magnet means to produce said trigger pulses, said trigger coil means including a core means forming a magnetic circuit from said second magnet means to said connecting surface and a trigger coil about a portion of said core means; and

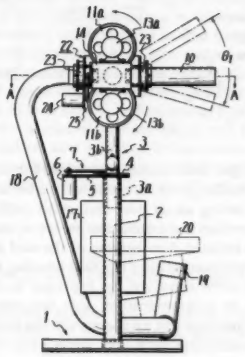
(D) a control circuit for receiving said trigger pulses and for effecting timed energization of said ignition coil means from said capacitor means.

4,325,351

COACTING WHEEL BALL EMITTING DEVICE OF TENNIS TRAINING SYSTEM

Sueto Yuasa, 5-9-10, Seta, Setagaya-ku, Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,562
Claims priority, application Japan, Jan. 30, 1979, 54-10599[U]
Int. Cl.³ F41B *15/00*
U.S. Cl. 124—78 **1 Claim**



1. A ball emitting device comprising:

(a) a ball emitting cylinder;

(b) means for controlling horizontal and vertical rotation of said ball emitting cylinder;

(c) a supporting member for rotatably supporting said ball emitting cylinder;

(d) said supporting member having a rear plate extending downward therefrom;

(e) a control motor mounted on an outer surface of said rear plate and driven at a low speed in forward and backward directions;

(f) first and second side plates on said supporting member having first and second aligned bearings therein respectively for supporting said ball emitting cylinder at a predetermined axial position thereof;

(g) a base plate fixed to said ball emitting cylinder;

(h) said base plate having at least one bent portion bent at a substantial angle to the remainder thereof;

(i) upper and lower motors on said base plate, speeds of said upper and lower motors being independently variable;

(j) upper and lower ball emitting pulleys affixed respectively to said upper and lower motors;

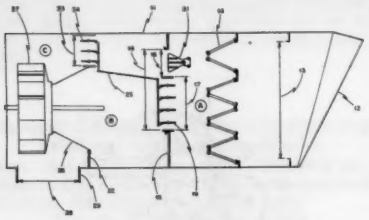
(k) perimeters of said upper and lower ball emitting pulleys particularly protruding into opposed locations in said ball emitting cylinder through openings in upper and lower peripheral surfaces thereof thereby to drivingly emit balls from said ball emitting cylinder with variable speed and variable spin speed; and

(l) inclined angle control means including said control motor and a link member driven by said control motor said link member being disposed between said rear plate and said bent portion and connected to said bent portion, said inclined angle control means being effective to control inclined angles of axes of said ball emitting pulleys to impart variable spin direction to emitted balls.

4,325,352
INTERNAL RECIRCULATION DEVICE

James V. Dirkes, Grand Rapids, Mich., assignor to Rapid Engineering Inc., Mich.

Filed Sep. 26, 1980, Ser. No. 191,288
Int. Cl.³ F24H 3/02; F25B 29/00
U.S. Cl. 126—110 A 1 Claim



1. A direct gas fired heating apparatus for supplying a variable volume discharge air flow output to a building comprising

a housing having an air inlet and an air outlet,

a profile partition and a bulkhead partition; the said bulkhead partition situated downstream of the said profile partition and compartmentalizing the said housing into a first, second and third chamber; an aperture in the said profile partition in communication with the said first and said second chambers and an aperture in the bulkhead partition in communication with said second and third chambers, each of said apertures served by a first and second damping means respectively which are mechanically interlocked in opposition to each other,

a burner assembly supported in the housing and in spaced relationship with the upper part of the aperture in the said profile partition not served by the first damping means,

a blower assembly supported in the bulkhead partition for flowing a low pressure air stream forwardly past the burner and through the said aperture of the said profile partition at a substantial constant velocity,

wherein the said blower assembly forces the volume discharge air flow through both the air outlet into the interior of the building and through the said aperture in the said bulkhead partition for recirculating the volume of air flow output increment recirculated controlled by the resistance imposed by the said aperture of the said bulkhead partition.

4,325,353
HEATING APPARATUS

Marlin V. Huss, Liberty, Nebr. 68381

Filed May 2, 1980, Ser. No. 146,007
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 12 Claims

1. An improvement in heating apparatus of a type having a firebox in fluid communication with a chimney wherein the improvement comprises:

(a) Updraft passageways surrounding the firebox;

(b) Downdraft passageways surrounding the firebox wherein the downdraft passageways are in fluid communication with the updraft passageways;

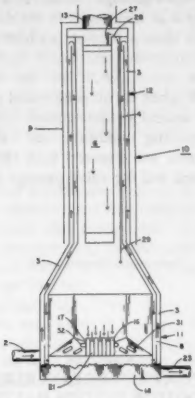
(c) A diagonal downdraft duct transversing the interior of the chimney space, in fluid communication with said updraft and downdraft passageways;

(d) A front manifold in communication with said downdraft passageways;

(e) Inlet means wherein unheated air is introduced into the updraft passageways;

(f) Exit means wherein said exit means are in fluid communication with said front manifold means;

(g) An exhaust chimney wherein said updraft passageways and said downdraft passageways extend into said chimney; and

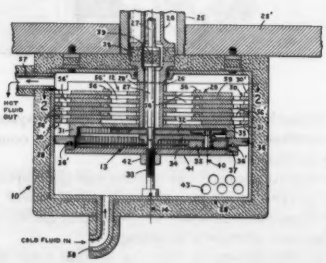


(h) Forced air means for forcibly moving air through the inlet means, the updraft passageways, the downdraft passageways, the diagonal downdraft duct, the front manifold, and the exit means.

4,325,354
ENERGY CONVERSION APPARATUS

Francis J. Fuchs, 9 University Way, Princeton, N.J. 08550

Filed Jan. 22, 1979, Ser. No. 5,003
Int. Cl.³ F22B 37/10
U.S. Cl. 126—247 6 Claims



1. Apparatus for converting rotational kinetic energy into a different energy form, said rotational kinetic energy being obtained from the rotor shaft of a rotatable energy conversion device that itself converts the kinetic energy of a moving stream of fluid into said rotational kinetic energy, said fluid kinetic energy conversion having a maximum efficiency at a predetermined rotor shaft speed, said rotatable energy conversion device including means for measuring the velocity of the stream of fluid and for translating the same to the rotation of a second shaft, said apparatus comprising:

(a) at least one rotatable friction disc connected to said rotor shaft for rotation therewith;

(b) at least one stationary friction disc mounted on a support means;

(c) said rotatable and said stationary discs being relatively displaceable between positions of high and low frictional engagement with each other; and

(d) means responsive to variations in the relative angular velocities of said rotor shaft and said second shaft to vary

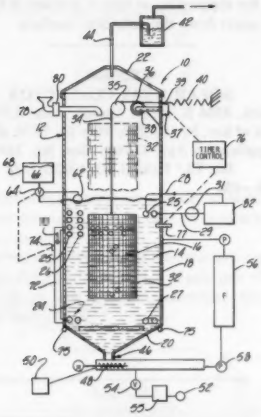
the position of said rotatable and stationary discs whereby to vary the frictional engagement therebetween.

4,325,355

HEATING SYSTEM

Clifford F. Houser, Flint, Mich., assignor to Molecular Energy Corp., Flint, Mich.

Filed Jan. 28, 1980, Ser. No. 116,142
Int. Cl.³ F24J *1/00*
U.S. Cl. 126—263 **16 Claims**



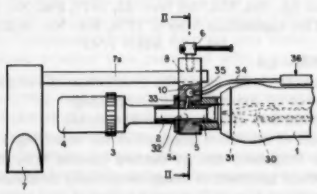
1. A heating system for continuously producing heat by flameless exothermic reaction comprising; an enclosed housing, a liquid solution occupying the lower portion of said housing, a container movably disposed in said housing and being supported for movement completely into and out of said solution, a solid metal material disposed in said container and being capable of reacting with said solution, a movement means regulating the immersion of said container downwardly into said solution in response to the temperature of said solution below a predetermined valve and upwardly from said solution in response to the temperature of said solution above another predetermined valve, and heat transfer means completely immersed in said solution for absorbing heat from said solution and conveying it to the exterior of said housing.

4,325,356

IGNITER FOR PORTABLE GAS APPLIANCES

Felix Taschler, Triesterstr. 35, A 2620 Neunkirchen, Austria

Filed Apr. 3, 1980, Ser. No. 136,925
Claims priority, application Austria, Apr. 9, 1979, 2637/79
Int. Cl.³ B23K *3/02*
U.S. Cl. 126—413 **5 Claims**



1. A portable gas appliance comprising:

a mixing nozzle connected to a source of a combustible gas and provided with an air source for forming an ignitable gas mixture downstream of said nozzle;

a tube forming a main gas flow passage extending axially from said nozzle for conducting said mixture;

a tubular burner mouth formed on said tube at an end thereof remote from said nozzle and constructed to produce a torch-like flame;

means forming an ignition chamber laterally offset from said passage and communicating therewith at a location downstream of said nozzle but upstream of said mouth whereby a portion of the ignitable mixture traversing said passage forms in said chamber

ignition means including an electrode extending into said chamber for firing said portion of said ignitable mixture whereby the firing of said portion is transmitted to the remainder of the ignitable mixture in said passage;

a handle, said nozzle being formed in said handle;

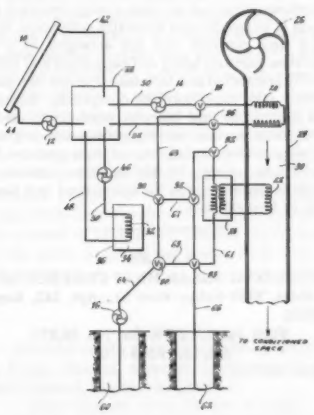
a holder disposed adjacent said handle; and means for adjustably mounting a soldering iron on said holder whereby a head of said iron is disposed in the effective region of said flame ahead of said mouth, said chamber being formed by a semicylindrical electrically insulating and heat-resistant body disposed on said tube and formed with an opening, said tube being provided with an orifice registering with said opening and communicating with the chamber defined therein.

4,325,357

SOLAR ENERGY AND GROUND-WATER COOLING DEVICES

Eric M. Wormser, 88 Foxwood Rd., Stamford, Conn. 06903

Filed May 12, 1980, Ser. No. 149,270
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 **7 Claims**



1. Apparatus for modifying the temperature of air comprising

radiant energy collection means for heating liquid,

storage tank means for storing liquid heated by said radiant energy collection means,

an air plenum having an associated air impeller means,

a direct coil positioned in said plenum for imparting temperature change to air passing therethrough,

first pump means for propelling liquid from and back to said storage tank means,

heat pump means for extracting heat from liquid passing therethrough when the heat pump means is operating in the compression heating mode and for imparting heat to liquid passing therethrough when the heat pump means is operating in the evaporation cooling mode, said heat pump means having an associated heat pump coil positioned in said plenum for imparting heat to air passing

therethrough when said pump is operating in the compression heating mode and for extracting heat from air passing therethrough when said pump is operating in the evaporation cooling mode,

ground-water source means and ground-water return means having a second pump means associated therewith for propelling ground-water from said source means to said return means,

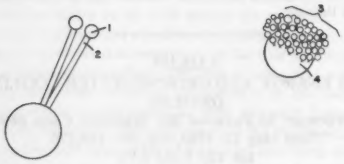
and associated valve means and conduit means for selectively directing the flow of liquid from said storage tank means to either of said direct coil and said heat pump means, and from said ground-water source means to either as well as both of said direct coil and said heat pump means.

4,325,358

SOLAR HEATING APPARATUS

John E. Comparetto, 108 Cropper St., Chincoteague, Va. 23336

Filed Aug. 17, 1979, Ser. No. 67,503
Int. Cl.³ F24J 3/02
U.S. Cl. 126—432 20 Claims



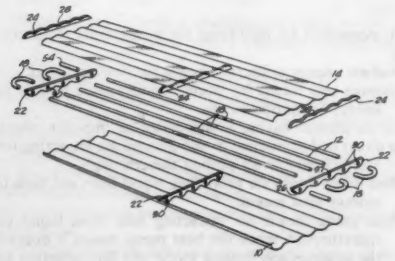
1. Solar heat collecting apparatus comprising a plurality of bulbous portions subjected to solar energy wherein each bulbous portion is integrally and severally connected to one of a plurality of stem portions that are arranged in a culstered manner, all stem portions being self-supported and individually and integrally connected and terminated in one of a plurality of central cores, said stem portions comprising means for the transfer of heat from said bulbous portions to said control cores, the bulbous portions having cross sections greater than two times respective cross sections of stem portions for direct collection of solar energy by the bulbous portions, and the central cores including means for connection to a master core for transfer of heat thereto.

4,325,359

FOCUSING SOLAR HEAT COLLECTOR

James E. Fries, 7860 Valley View St., Apt. 242, Buena Park, Calif. 90620

Filed Jul. 12, 1979, Ser. No. 56,873
Int. Cl.³ F24J 3/02
U.S. Cl. 126—438 5 Claims



1. A focusing solar heater collector comprising:

(a) a light reflective corrugated base surface;

(b) a plurality of spaced-apart, light-transmitting conduits positioned in correspondingly spaced-apart corrugations of the reflective surface so that light reflected by the reflective surface is focused on the conduits, the conduits not substantially masking the light reflective corrugated base surface from sunlight;

(c) a light-transmitting upper surface air spaced apart from the conduit;

(d) a black liquid within the conduits to receive the focused light;

(e) means for tilting the base surface, conduits, and upper surface together to focus sunlight upon the conduits; and

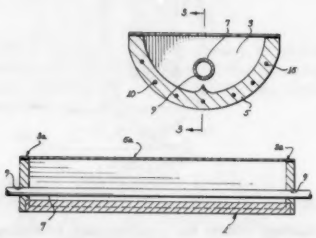
(f) means for supporting at least a portion of the conduits air spaced apart from the reflective surface.

4,325,360

SOLAR HEAT COLLECTOR

Lee M. Kelley, 3356 E. Pima, Tucson, Ariz. 85716

Continuation of Ser. No. 43,200, May 29, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,788
Int. Cl.³ F24J 3/02; G02B 7/18
U.S. Cl. 126—438 6 Claims



1. A concentrating solar heat collector for heating a fluid contained in absorber pipe extending therethrough in an axial direction wherein a reflecting surface is contained within said collector which comprises:

(a) a trough-like structure of integral unitary construction having a lengthwise axis and at least a partial curvilinear cross-section and including at least one supporting portion, said structure being formed of light-weight concrete with the density thereof varying in the axial direction, said support portion being located in a zone of higher density, and

(b) means for receiving an absorber pipe extending in the direction of the lengthwise axis of said structure, and supporting said trough-like structure therefrom, said means being contained in said zone of higher density.

4,325,361

DEEP HEATING ELECTRODE

William H. Harrison, Woodland Hills, Calif., assignor to Donald L. Morton & Associates, Pacific Palisades, Calif.

Division of Ser. No. 854,730, Nov. 25, 1977, Pat. No. 4,186,729. This application May 4, 1979, Ser. No. 36,223
Int. Cl.³ A61N 1/42
U.S. Cl. 128—1.3 2 Claims

1. An electrode for use in the destruction of tumors in living animal tissue by hyperthermia comprising:

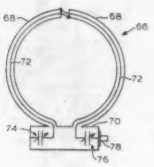
(a) a shield box of a conductive material;

(b) a pair of electrical connectors for attaching a source of radio frequency energy carried by said box, one of said electrical connectors being electrically connected to said box;

(c) a pair of semi-annular conduits of an electrically conductive material each electrically connected on one end thereof to said shield box and communicating with the interior thereof, said pair of conduits being disposed to

form a substantially annular shape with the other ends thereof in close adjacent spaced relationship;

(d) a pair of electrical conductors disposed coaxially within respective ones of said conduits and insulated therefrom from respective first ends disposed within said shield box to respective second ends exiting said close adjacent spaced ends of said conduits, each conductor being electrically connected on said second end to said spaced end of said conduit in which it is not coaxially disposed;



(e) a first variable capacitor electrically connected between one of said first ends of said pair of conductors and said shield box; and,

(f) a second variable capacitor electrically connected between the other of said first ends of said pair of conductors and the one of said pair of connectors not electrically connected to said box.

4,325,362

ENDOSCOPE

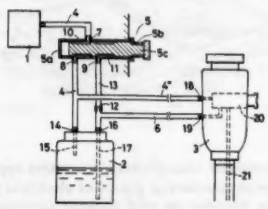
Teruo Ouchi, Kamifukuoka; Hirohisa Ueda, and Kazukiyo Tamada, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Division of Ser. No. 24,214, Mar. 26, 1979, Pat. No. 4,261,343. This application Dec. 22, 1980, Ser. No. 218,988

Claims priority, application Japan, Mar. 28, 1978, 53/39814[U]; Mar. 28, 1978, 53/39815[U]; Mar. 31, 1978, 53/41966[U]; May 15, 1978, 53/64797[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **22 Claims**



1. An air and water supplying device for an endoscope, comprising; an air pump air supplying tube connected to an air pump, an endoscope provided with air and water switching valve means, a water tank provided with a compressed air receiving inlet and a water delivering outlet, a water supplying tube connecting said endoscope and said water tank to supply air and water to the top end part of said endoscope and air valve switching means for receiving compressed air in said air pump and distributing it in a water supplying path comprising said water supplying tube and a water pumping-up tube in said water storing tank in such a manner that, said particular inlet is normally closed by said air valve switching means and when a particular inlet is opened by said air valve switching means the compressed air introduced into said particular inlet discharges the water remaining in the water supplying path.

4,325,363

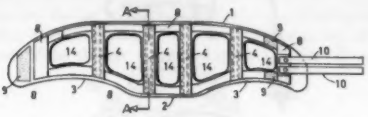
POSTURE TRAINING THERAPEUTIC NECK SUPPORT

Joseph Berkeley, 1244 Devonshire Rd., Windsor, Ontario, Canada (N8X 1J3)

Continuation of Ser. No. 919,130, Jun. 26, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,738

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—75 **2 Claims**



1. A posture training and therapeutic neck support comprising a collar shaped to fit the front, back, and the upper and lower joints of the neck of a person, said collar being made of a soft, spongy material reinforced around the rim, a plurality of holes provided in the collar at intervals along a substantial portion of the length of the collar for ventilation, a plurality of generally vertical stays spaced at predetermined intervals between said holes along a substantial portion of the length of said collar, each of said stays comprising a narrow receptacle of a soft material and a thin strip of pliable material in at least some of said receptacles, which strips can be removed, shortened, and/or bent, as required, each of said narrow receptacles having attaching means extending substantially the length thereof, means for closing and opening the collar at the ends thereof, said collar also having attaching means near the ends thereof beyond the end ventilation holes therein, a plurality of separate, generally vertical supports of generally rectangular shape with the height exceeding the width and with the height exceeding the width of said collar for all portions of said collar, said supports having vertical legs and upper and lower legs connecting the vertical legs, with all of said legs enclosing thin bendable strips therein to enable said vertical supports to be bent and shaped as required, said supports having attachment means on the vertical legs thereof for temporarily attaching said vertical supports to said collar at said attaching means of said narrow receptacles to enable said supports to be moved to various heights relative to the width of said collar so as to project adjustable distances above the upper edge of said collar and to be located at various incremental positions along substantially the entire length of said collar, whereever additional support is required.

4,325,364

TRAINING BREATHING APPARATUS

John D. Evans, Balerno, Scotland, assignor to Coal Industry (Patents) Limited, London, England

Filed Dec. 26, 1978, Ser. No. 972,935

Claims priority, application United Kingdom, Jan. 10, 1978, 00853/78

Int. Cl.³ A62B *7/00*

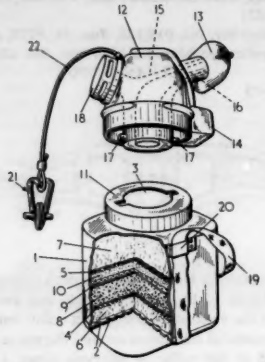
U.S. Cl. 128—201.13 **7 Claims**

1. A warm air training model breathing apparatus comprising:

a breathing air conduit having a first end for receiving exhaled air from a user and supplying inhaled air to a user;

a canister having a first opening connected to a second end of said breathing conduit and a second opening communicating with ambient atmosphere, said canister containing, between said first and second openings, a reagent which creates heat by reaction with carbon dioxide and/or moisture in exhaled air, said canister including passage means for directly passing inhaled air from said second opening through said reagent where it is heated and through said first opening to said breathing conduit to a user and pass-

ing exhaled air from a user from said breathing conduit through said first opening, through said reagent causing generation of heat, and through said second opening to ambient atmosphere.

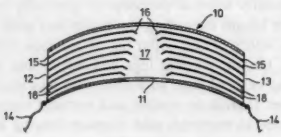


4,325,365

ATHLETE'S BREATHING APPARATUS

John P. Barbuto, 5801 S. 300 East #260, Murray, Utah 84107

Filed Dec. 11, 1980, Ser. No. 215,190
Int. Cl.³ A62B 7/00
U.S. Cl. 128—201.13 **6 Claims**



1. An apparatus for warming and moisturizing inspired cold air for athletes, comprising in combination:

A hollow housing having both a downward and a lateral curvature for fitting over the mouth of a wearer; said housing having an oral aperture disposed centrally of the laterally curving portion of said housing on the concave side thereof; said housing also having mutually opposing open lateral ends;

Strap means attached to said housing for securing said housing to the head of a wearer; and

A plurality of mutually spaced-apart analogous pairs of leaf members with each member of a pair extending laterally within said housing outwardly from the center to said ends of said housing; said pairs of leaf members being arranged with in said housing so that a chamber is formed next to said oral aperture by the inner ends of said leaf members, said chamber having diminishing width created by decreasing distance between the ends of successive leaf pairs from the oral aperture to the opposite side of said housing.

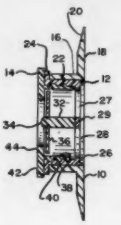
4,325,366

VALVE AND METHOD FOR USE WITH A TRACHEOTOMY TUBE

Carl J. Tabor, 9845 Reavis Rd., St. Louis, Mo. 63123

Filed Jul. 7, 1980, Ser. No. 166,345
Int. Cl.³ A61M 25/00
U.S. Cl. 128—207.16 **16 Claims**

1. A valve for use with a tracheotomy tube comprising a valve body having an air passageway therethrough, said valve body including means for connecting said passageway with a tracheotomy tube, a post in said air passageway, means for centering said post in said air passageway and allowing passage of air through said air passageway, flexible diaphragm means whose center is attached to said post and sized to fit within said air passageway, and a valve seat at one end of said air passageway and spaced a predetermined distance from said diaphragm means, said valve seat having an opening therethrough smaller than said (membrane) diaphragm means, said flexible diaphragm means (operable for allowing) being so constructed that it allows air to flow around its periphery through said air passageway in either direction when the air velocity is at a rate present while breathing normally through said tracheotomy tube and (operable for everting) everts into sealing engagement with said valve seat when air is exhaled through said tracheotomy tube at a rate above that present when breathing normally thereby blocking said air passageway.

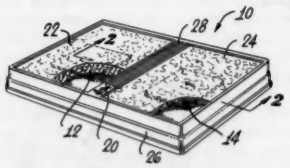


4,325,367

IONTOPHORETIC TREATMENT APPARATUS

Robert Tapper, 1935 Armacost Ave., Los Angeles, Calif. 90025

Continuation-in-part of Ser. No. 52,295, Jun. 26, 1979, abandoned, which is a continuation of Ser. No. 806,393, Jun. 13, 1977, Pat. No. 4,164,226. This application Nov. 19, 1979, Ser. No. 95,632
Int. Cl.³ A61N 1/30
U.S. Cl. 128—207.21 **5 Claims**

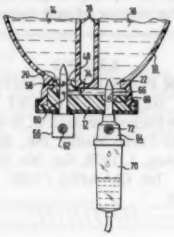


1. A self-contained iontophoretic treatment apparatus comprising: a support structure; a source of electrical power and a control means therefor on said support structure; a pair of electrodes mounted on said support structure in generally close proximity to one another, said electrodes being connected to said source of electrical power through said control means; porous pads on said electrodes, and an insulating member extending between said electrodes, a first of said electrodes being connected to said source of electrical power and arranged to act primarily as a cathode, and the other electrode being connected to said source of electrical power and arranged to act primarily as an anode, said first electrode being formed of stainless steel and said other electrode being formed of substantially pure aluminum, said support structure and said electrodes being sized and arranged so that a surface to be treated can extend across said insulating member and simultaneously contact both of said pads, whereby electric current from said electrodes for effecting iontophoretic treatment will pass only through the surface being treated.

4,325,368
INFUSION DEVICE

Erich Kaemmerer, Steinhagen, Fed. Rep. of Germany, assignor to Ingrid Bernard, Steinhagen, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,476
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854392; Feb. 26, 1979, 2907479; Oct. 22, 1979, 2943586
Int. Cl.³ A61M *5/14, 5/16*
U.S. Cl. 128—214 R **17 Claims**



1. An infusion device which is adapted to receive a penetrating cannula for simultaneously infusing a plurality of liquids, comprising:

a container having an orifice on the side which is the underside in the operational position, at least first and second chambers therein for holding a plurality of infusion liquids and first and second openings connecting said first and second chambers with said orifice;

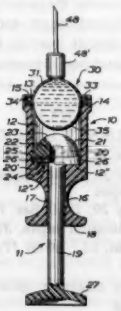
and

a stopper member for inserting into said orifice and sealing said orifice as well as sealing said first and second openings from one another, said stopper member including therein a cavity which lies in the path of a penetrating cannula and which is adapted to provide codispensing communication between said first and second chambers upon insertion of a penetrating cannula for codispensing said plurality of infusion liquids.

4,325,369
DISPOSABLE CONTAINER FOR A SYRINGE

Nils B. Nilson, Mjölby, Sweden, assignor to KeNova AB, Malmo, Sweden

Division of Ser. No. 5,878,267, Feb. 16, 1978, Pat. No. 4,255,122, which is a continuation of Ser. No. 5,684,020, May 7, 1976, abandoned. This application Jul. 16, 1980, Ser. No. 169,429
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 D **1 Claim**



1. A container adapted to form the end wall of the open discharge end of a barrel of a syringe, the container comprising:

a substantially rigid first wall portion having an inside surface;

a flexible second wall portion introvertible upon the inside surface of the first wall portion;

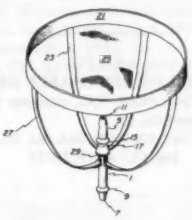
a nozzle on said first wall portion for attaching a hypodermic needle thereto, said first and second portions being formed into a unitary shell; and

circumferential flange means integral with said shell substantially at the intersection of said first and second wall portions and having a resilient periphery for resiliently interacting with a surface of the open discharge end of the barrel of the syringe for retaining the container thereon.

4,325,370
DISPOSABLE DEVICE FOR FIXATION OF THE BARIUM ENEMA TIP

Ruperto S. Young, Amsterdam, N.Y., assignor to Janis Marie Young, Amsterdam and Roberta H. Wessendorf, Guilderland, both of, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,141
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—245 **7 Claims**



1. The combination of a barium enema tip and a device for the external fixation of said barium enema tip, said barium enema tip being insertable into a patient's rectum to perform the x-ray procedure whereby a contrast material is introduced through the rectum and the examination is performed after the colon is filled with an adequate amount of barium liquid, said device being of integral, one-piece construction and comprising a waist band, anterior strap, posterior straps and locking ring, said anterior strap being in attached relationship with said waist band, said posterior straps being in attached relationship with said waist band, said anterior and posterior straps being in attached relationship with said locking ring, said barium enema tip having, in circumferential relationship, a locking groove on its external surface, said locking ring being a split ring engageable with said locking groove to effect removable locking engagement therewith during use, said waist band of said device when put on and worn by said patient fitting snugly against the waist, said anterior strap fitting snugly against the body and running from the inner, upper thighs to said waist, and said posterior straps fitting snugly against the body and running around the buttocks area to said waist, said barium enema tip having an hour-glass shaped cuff having a concave portion thereby and whereby, upon said barium enema tip being inserted into the patient's rectum, the patient's anal sphincter will complementally receive and lock upon said concave portion of said cuff to prevent leakage of barium liquid around said barium enema tip.

4,325,371
LOQUAT-LEAF MOXIBUSTION THERAPY AND A MOXA STICK FOR USE IN THE THERAPY

Koukichi Atsumi, No. 2592-2, Koike-cho, Hamamatsu City, Shizuoka Prefecture, Japan

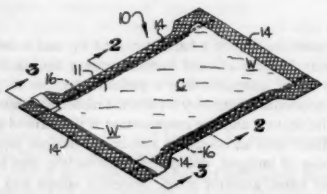
Filed Apr. 5, 1978, Ser. No. 893,717
Claims priority, application Japan, Apr. 8, 1977, 52-44435
Int. Cl.[2] A61F 7/00
U.S. Cl. 128—254 30 Claims

1. A loquat-leaf moxibustion therapy comprising setting on the surface of the subject's body skin layers of a loquat leaf placed face down on the surface of the skin and located to cover a selected remedial spot of the subject's body and mattings of vegetable fibers placed on the loquat leaf, applying a moxa stick kindled at one axial end thereof onto said mattings in such a manner that the kindled end of the moxa stick is axially directed to said remedial spot across the layers of the mattings and the loquat leaf, and pressing the moxa stick axially onto the mattings for causing the moxa stick to axially thrust at its kindled end against the subject's body in the region of the remedial spot across the layers of the mattings and the loquat leaf.

4,325,372
ELASTIC LEG DISPOSABLE DIAPER

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Filed Oct. 16, 1979, Ser. No. 85,372
Int. Cl.[3] A61F 13/16
U.S. Cl. 128—287 2 Claims



1. An improved elastic leg disposable diaper of generally hour-glass configuration providing longitudinal edge portions on opposite sides and transverse edge portions on opposite ends and defining between said longitudinal edge portions outer waist-fitting areas and a central crotch-fitting area of reduced width, said diaper comprising:

a fluid-permeable top cover sheet;

a fluid-impermeable bottom cover sheet;

a fluid-absorbent interior pad positioned between said top and bottom cover sheets;

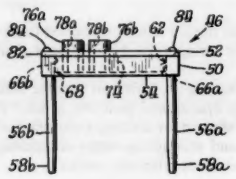
an elastic strip extending and being secured to said diaper along the full length of each of said longitudinal edge portions and along said central crotch-fitting area and said waist-fitting areas of said diaper, and wherein each of said elastic strips are secured in said crotch-fitting area in stretched elastically-contractible condition forming gathered and extendible side portions in said crotch-fitting area when said elastic strips are relaxed for elastic conformance with the legs of the wearer and are secured in said waist-fitting areas in less stretched elastically-contractible or substantially relaxed condition than in said crotch-fitting area so as to provide less or no gathering of the side portions in said waist-fitting areas compared to said crotch-fitting area; and

means securing said top cover sheet and said bottom cover sheet to each other along the full length of said longitudinal edge portions and said transverse end portions for effectively sealing said diaper around the periphery thereof to eliminate open passageways which may cause leaking from the interior of said diaper.

4,325,373
APPARATUS FOR FORMING AN OSTEOTOMY FOR A DENTAL IMPLANT

Victor Slivenko, San Diego, and Jack C. Bokros, Alpine, both of Calif., assignors to Carbo Medlec Inc., San Diego, Calif.

Filed Aug. 1, 1978, Ser. No. 930,057
Int. Cl.[3] A61B 17/00
U.S. Cl. 128—303 R 4 Claims



1. A drill guide system for preparing a jawbone for implantation of a dental implant, said system comprising a drill guide placement fixture including a unitary body member having a placement locating pin adapted for close fitting insertion into a first locating hole formed in the jawbone, said placement fixture further having a guide bore therethrough having an axis substantially parallel to and coplanar with said locating pin and spaced a predetermined distance therefrom, said guide bore being adapted to receive a dental burr therethrough for forming a second locating hole in the jawbone parallel to said first locating hole, and a drill guide including a housing having a pair of locating pins fixed thereto in generally normal relation, said locating pins having parallel longitudinal axes spaced apart a distance substantially equal to said predetermined distance and being adapted to be received in said first and second locating holes, said drill guide housing defining a retaining recess therein extending between said locating pins, a slide block laterally retained within said recess and adapted for sliding rectilinear movement therealong, said slide block defining a guide bore therethrough moveable therewith and adapted to receive a dental burr to facilitate forming of an elongated slot in the jawbone between said locating pins.

4,325,374
HIGH FREQUENCY ELECTROSURGICAL INSTRUMENT FOR AN ENDOSCOPE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,441
Claims priority, application Japan, Jun. 4, 1979, 54-75744[U]
Int. Cl.[3] A61B 17/39
U.S. Cl. 128—303.15 17 Claims

1. A high frequency electrosurgical instrument used in an endoscope, comprising:

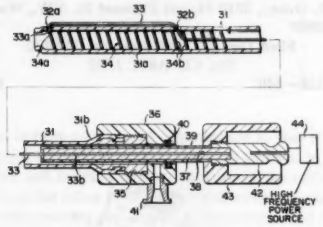
a flexible tube having a distal end, a proximal end and a distal end portion adjacent to the distal end;

a first electrode wire guiding hole and a second electrode wire guiding hole formed in the distal end portion of said

flexible tube and spaced apart axially of said flexible tube, said first electrode wire guiding hole being located closer to the distal end of said flexible tube than said second electrode wire guiding hole;

a flexible coil having two ends, said flexible coil being inserted in the distal end portion of said flexible tube so as to prevent said distal end portion from being deformed and extending at least between said first and second electrode wire guiding holes with one end of said flexible coil being located near said first electrode wire guiding hole, said flexible coil having at least one pair of adjacent turns which are located adjacent to said second electrode wire guiding hole; and

an electrode wire having first and second ends and an intermediate portion extending between said first and second ends, said electrode wire being reciprocable along said flexible tube, the first end of said electrode wire being



disposed in said flexible tube immovably with respect to said flexible coil, said intermediate portion of said electrode wire extending out of said flexible tube through said first electrode wire guiding hole and extending outside said flexible tube between said first and second electrode wire guiding holes and then entering into said flexible tube through said second electrode wire guiding hole and then passing between the respective turns of said at least one pair of adjacent turns of said flexible coil which are located adjacent to said second electrode wire guiding hole, said intermediate portion of said electrode wire further extending through said flexible tube from said second electrode wire guiding hole to the proximal end of said flexible tube so that the second end of said electrode wire is at the proximal end of the flexible tube, and the second end of said electrode wire is adapted to be connected to a high frequency source.

4,325,375

INSTRUMENT FOR INSERTING AND REMOVING INTRAOCULAR LENS

Herbert J. Nevyas, 1414 June La., Narberth, Pa. 19072

Filed May 12, 1980, Ser. No. 149,070

Int. Cl.³ A61B *17/28*

U.S. Cl. 128—321 **7 Claims**

1. An instrument for inserting and removing an intraocular lens of the type having centering strands, said instrument comprising first and second jaws being formed and shaped to grasp and manipulate said intraocular lens and hold said centering strands, a tubular member, said first jaw being fixed to one end of said tubular member, a rod extending through said tubular member, said second jaw being fixedly secured to one end of said rod, a base plate secured to the other end of said tubular member, an actuator connected to the other end of said rod at a location juxtaposed to and overlying said base plate, wherein one of said actuator and base plate is generally flat while the other is curved or angled so that the central portion of the actuator is closer to the base plate as compared with the side edges of the actuator, said actuator and base plate being arranged to facilitate cooperative manipulation by only a pair of

fingers to oscillate said rod about its longitudinal axis and thereby allow said jaws to be opened, closed and manipulated.

4,325,376

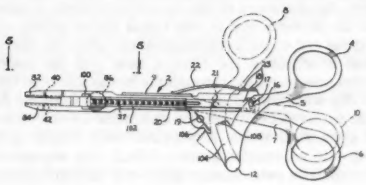
HEMOSTATIC CLIP APPLICATOR

Charles H. Klieman, 3737 Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, South Gate, Calif., assignors to Charles H. Klieman, Lynwood, Calif.

Continuation of Ser. No. 822,076, Aug. 5, 1977, abandoned. This application Sep. 2, 1980, Ser. No. 183,360

Int. Cl.³ A61B *17/12*; B31B *1/00*

U.S. Cl. 128—325 **41 Claims**



1. A surgical clip applying device comprising:

(i) a main body;

(ii) clip magazine means coupled to the exterior of said main body for holding a plurality of clips;

(iii) clip deforming means coupled to said main body for receiving and deforming said clips;

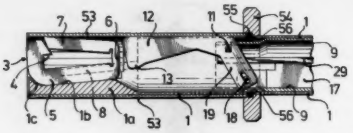
(iv) a laminated clip feed means slideably disposed within said clip magazine means and adaptd to slide into and out of said clip deforming means for sequentially moving said clips from said clip magazine means to said clip deforming means; and

(v) actuating means coupled to said clip feed means and said clip deforming means for sequentially actuating said clip feed means and said clip deforming means, whereby actuation of said actuating means first causes said clip feed means to: (i) engage the clip in said clip magazine which is closest to said clip deforming means, (ii) slide into said deforming means and thereby move said clip from said clip magazine means to said clip deforming means, and (iii) retract from said deforming means while leaving said clip in said deforming means, and then further actuation of said actuating means causes said clip to be deformed by said clip deforming means.

4,325,377
SURGICAL FORCEPS FOR APPLYING CLIPS TO FALLOPIAN TUBES

Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,949
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917783
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—326 **2 Claims**

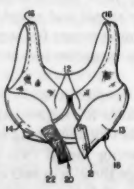


1. In surgical equipment arranged for tubal ligation including a trocar sleeve to be inserted through an incision in the abdominal wall, and also including forceps insertable through the trocar sleeve for applying clips to fallopian tubes, the forceps comprising a stem having an opening at its distal end for insertion of a clip formed by two branches held apart by an elastic connecting strap, and further comprising a closing lever near said opening displaceable in said stem axially with respect to said clip by means of a proximal handle, which lever by actuation of said handle is pivoted into a closed position and brings the free extremities of said clip branches into coupled engagement gripping one behind the other in hook-like manner, the improvement which consists in that a cylindrical sleeve is provided which when positioned over said forceps stem from the distal extremity brings or pivots the unclosed branch of the inserted clip projecting from the periphery of said forceps stem against the other clip branch held fast in said forceps without coupled engagement and into a position in alignment with said forceps stem insertable through a trocar sleeve, the diameters of the two sleeves being so related that with the proximal end of said trocar sleeve axially aligned to the distal end of the cylindrical sleeve when the latter is positioned as aforesaid the forceps stem and the inserted clip thereon may be passed through the trocar sleeve so the uncoupled clip will spring open when it emerges from the distal end of the trocar sleeve inside the abdominal cavity, and wherein said cylindrical sleeve is provided with a split spring ring fitting into an annular groove, which ring engages partially into a shallow outer annular groove of said forceps stem.

4,325,378
SPORTS GARMENT

Margaret Wilkinson, 103 Grant Rd., Landsdale, Pa. 19446

Filed Apr. 21, 1980, Ser. No. 141,869
Int. Cl.³ A41C *3/02*
U.S. Cl. 128—501 **6 Claims**

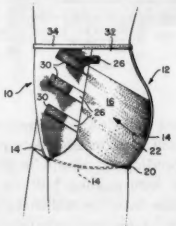


1. A sports garment for protecting and supporting the breasts of a person engaged in physical activity, comprising:
a torso encircling inner liner having breast receiving pockets and shoulder straps;
an elastic member disposed along the bottom of the inner liner, the inner liner being so shaped that the elastic member is disposed, in use, against the torso and along the curve of the breasts;
breast supporting flaps attached to the inner liner at points behind each of the breast receiving pockets respectively, the flaps overfitting the breast receiving pockets, the breast receiving pockets being nevertheless independently displaceable relative to the flaps; and,
means for releasably and adjustably cinching the flaps together, the cinched flaps being substantially fixed in position relative to the torso, whereby the flaps provide an inwardly directed pressure for constraining excessive and harmful breast movement and the breast receiving pockets of the inner liner move together with the breasts and provide protection against chafing from breast movement not restrained by the flaps.

4,325,379
DERRIERE EXERCISER

Ahmet M. Ozbey, 3010 Mount Pleasant St. NW., Washington, D.C. 20009

Filed Dec. 17, 1980, Ser. No. 217,432
Int. Cl.³ A41C *1/00*
U.S. Cl. 128—540 **12 Claims**



1. Apparatus for exercising the muscles of the wearer's buttocks and pelvic floor including a front section and an adjustable back section, both of said sections extending from approximately the wearer's waist to approximately the top of the wearer's thighs, said apparatus comprising:
(a) buttocks separating means for moving the sections of the buttocks away from each other;
(b) buttocks lifting means for exerting a lifting force on each buttocks section substantially parallel to a line drawn from the wearer's coccyx to the iliac crest; and
(c) fastening means for adjustably securing said buttocks lifting means to the front section of said apparatus.

4,325,380
ORTHOTIC DEVICE FOR THE HEEL OF A PERSON'S FOOT

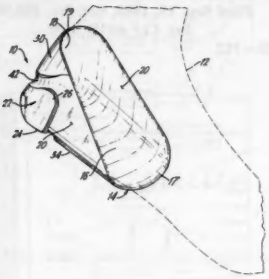
Howard Malkin, East Brunswick, N.J., assignor to Apex Foot Products Corporation, Englewood, N.J.

Filed Jul. 11, 1980, Ser. No. 168,776
Int. Cl.³ A61F *5/14*
U.S. Cl. 128—581 **17 Claims**

1. An orthotic device for the heel of a person's foot, the orthotic device comprising:
a flexible, cup-shaped body member adapted to surround the heel and adjacent portions of a person's foot when worn, the cup-shaped body member including a bottom portion extending longitudinally along a portion of the sole of the person's foot when worn by the person;
an integral substantially solid heel cushion disposed on said cup-shaped body member in the vicinity of the heel of the person's foot when worn by the person, said heel cushion being raised relative to the surface of said body member

and including side, back and bottom parts for cushioning and protecting the person's heel; and

three substantially solid rib members extending substantially longitudinally along the length of said bottom portion of said body member, each rib member being of a width greater than its height, one of said rib members comprising a central rib member raised from the surface of said cup-shaped body member to be in substantially the same plane



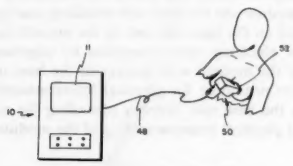
as said bottom part of said heel cushion so that it cooperates with the bottom part of said heel cushion to provide balance and stability against rocking of the orthotic device, and the other of said rib members being raised from the surface of said cup-shaped body member and comprising lateral rib members laterally spaced on opposite sides of said central rib member to stabilize the orthotic device against side to side roll.

4,325,381

ULTRASONIC SCANNING HEAD WITH REDUCED GEOMETRICAL DISTORTION

William E. Glenn, Fort Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,322
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **13 Claims**



1. In an apparatus for ultrasonically imaging sections of a body by transmitting ultrasonic energy into the body and determining the characteristics of the ultrasonic energy reflected therefrom, said apparatus including timing means for generating timing signals; energizing/receiving means operative in response to timing signals; and display/record means synchronized with said timing signals for displaying and/or recording image-representative signals from the energizing-/receiving means; an improved portable scanning module, comprising:

a fluid-tight enclosure having an ultrasonically-transmissive window which can be placed in contact with the body;

a fluid contained in said enclosure;

transducer means coupled to said energizing/receiving means for converting electrical energy to a beam of ultrasonic energy and for converting reflected ultrasonic energy to electrical signals.

means for focusing the ultrasound beam emanating from said transducer means;

reflective scanning means pivotably mounted in said fluid in the path of said ultrasound beam for effecting scanning of said beam across said body via said window;

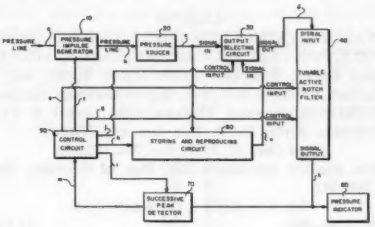
said window comprising an acoustic lens for converging the scan of the ultrasound beam incident thereon from within said enclosure, whereby said acoustic lens reduces geometrical distortion of the scan of said ultrasound beam.

4,325,382

PROCESS AND APPARATUS FOR THE REAL TIME ADAPTIVE FILTERING OF CATHETER PRESSURE MEASUREMENTS

Saul Miodownik, New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Filed May 15, 1980, Ser. No. 150,014
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—673 **18 Claims**



13. A device for effecting the real time adaptive filtering of the electrical signal output of a pressure transducer sensing fluid pressure in a pressure line, comprising:

a. a tunable active notch filter for receiving the output of the transducer at the input thereof;

b. means for periodically applying a negative pressure impulse to the pressure line instead of the fluid pressure to obtain a frequency domain transfer function response to each impulse; and

c. means for adjusting the tunable parameters of the active filter to each impulse response to compensate for the frequency response of the pressure line.

4,325,383

SYSTEM AND METHOD FOR MEASURING AND RECORDING BLOOD PRESSURE

Harold G. Lacks, 200 E. 64th St., New York, N.Y. 10021

Filed Aug. 29, 1980, Ser. No. 182,808
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—677 **3 Claims**

1. A system for measuring the systolic and diastolic blood pressure of a patient comprising:

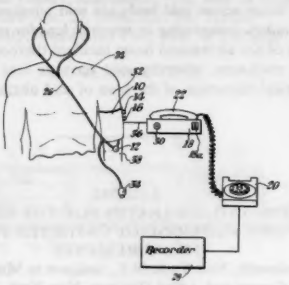
a pressure means connectable about an extremity of the patient for compression of the extremity to a predetermined maximum compression pressure and decompression of the extremity at a predetermined decompression rate;

a telephone communication system including a telephone accessible by the patient;

a stethoscope connected to a pulse sensing device and to said telephone; and

a prerecorded voice countdown means for generating audi-

ble pressure readings from said maximum compression pressure at said predetermined decompression rate in human understandable form, operably connected to said telephone communications system.



4,325,384

DIGITALLY CONTROLLED AMPLITUDE REGULATING DEVICE FOR ELECTROCARDIOGRAPHIC SIGNALS

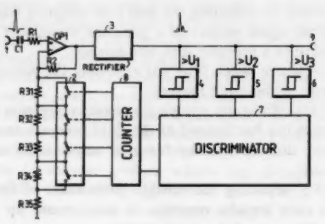
Reinhard Blaser, Büdingen; Klaus Olach, Berlin, and Max Schaldach, Erlangen, all of Fed. Rep. of Germany, assignors to BIOTRONIK.Mess-und Therapiegeräte GmbH & Co. Ingenieurbüro Berlin, Berlin, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,495

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853642

Int. Cl.³ A61B *5/04*; A61N *1/36*

U.S. Cl. 128—696 **12 Claims**



1. A signal processing device comprising: a signal input for receiving an electrocardiographic signal containing a succession of QRS complexes; a signal output; digitally operating means having a transmission factor which is variable in discrete steps and connected between said signal input and output for supplying to said signal output a signal containing representations of the QRS complexes contained in the signal received by said signal input, with the relation between the amplitude of the signal at said signal output and the amplitude of the corresponding portions of the signal received by said signal input being proportional to the existing transmission factor of said digitally operating means; and transmission factor control means including threshold detector means having associated selected first, second and third threshold values and connected to monitor the signal at said signal output for increasing the transmission factor of said digitally operating means by one step in response to each appearance at said signal output of a QRS complex representation having a peak value between the selected first and second threshold values and for reducing the transmission factor by one step in response to each appearance at said signal output of a QRS complex representation having a peak value greater than the selected third threshold value, said second threshold value being higher than said first threshold value, said third threshold value being higher than said second threshold value, and said first threshold value being higher than the amplitude of the signal at said signal output during intervals between QRS complexes in the electrocardiographic signal.

4,325,385

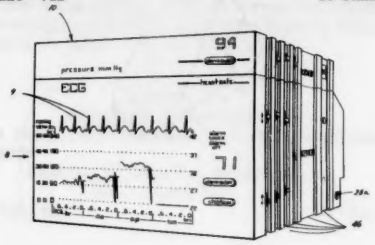
PATIENT MONITORING EQUIPMENT

Bo Holte, Klampenborg, Denmark, assignor to Simonsen & Weel's EFTF. A/S, Albertslund, Denmark

Filed Sep. 19, 1980, Ser. No. 188,909

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—712 **18 Claims**



1. Patient monitoring equipment comprising a base unit having an oscilloscope for visual display of signals representative of a plurality of physiological parameters, the base unit having means for connection of a patient derived ECG signal source to be visually displayed, module adapted to be separably associated with the base unit and having means for connection with a second signal source represenative of another physiological parameter of the patient, the module being adapted to be assembled with the base unit in stacked relation and with edges generally overlying edges of the base unit, means for physically interlocking the module and the base unit in assembled relation including interengageable means adapted to interlock upon edgewise sliding movement of the module with respect to the base unit in one direction, and means for electrically interconnecting the module and the base unit to provide for visual display of the physiological parameter received from said second signal source, the means for electrically interconnecting the module and the base unit including mating connectors positioned on the base unit and on the module in positions providing for electrical interconnection by edgewise sliding movement of the module with respect to the base unit in the same direction providing for physical interconnection of the module with the base unit, thereby providing for concurrent electrical and physical interconnection of the module with the base unit.

4,325,386

MEANS FOR TREATING SYMPTOMS OF MENIERE'S DISEASE OR THE LIKE

Jay W. Katz, 328 Cove Neck Rd., Oyster Bay, N.Y. 11771

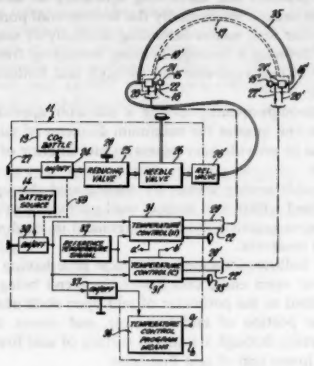
Filed Nov. 27, 1979, Ser. No. 97,707

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—733 **15 Claims**

1. Portable caloric gas-flow therapeutic apparatus for treatment of a nystagmus condition in a patient, comprising a first portable unit including a source of pressurized gas and an electric battery source and separate control means for regulating the outputs of said sources, a second portable unit having means for patient-head support at the region of an ear, said second unit including a speculum nozzle having an outlet poised for discharge into the ear when thus supported, conduit means connecting said nozzle to the control means associated with said gas source and including a flexible conduit between said units, said conduit means including at said second unit

electrical heating means adjacent the inlet to said nozzle, and flexible conductor means between said units and connecting



said heating means to the control means associated with said battery source.

4,325,387
SEALING APPARATUS FOR INTRAUTERINE PRESSURE CATHETER AND THE LIKE

Joel N. Helfer, Cheshire, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,876
Int. Cl.[3] A61B 5/00, 17/42
U.S. Cl. 128—748 9 Claims

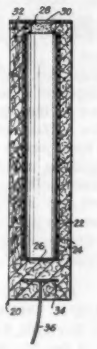
1. An apparatus for use in measuring the pressure within a body cavity comprising an elongated catheter filled with liquid and having a gauge end adapted to be connected to a transducer and a perforated body end adapted to be inserted into said body cavity; a guide tube adapted to define a path within the body through which said catheter is to be advanced, said guide tube having a gauge end and a body end, the body end of said catheter being positioned within said guide tube; and connector means releasably securing said catheter in a fixed relation to said guide tube, the improvement wherein:

said connector means comprises a first stretchable, tubular member having first and second ends and an inner diameter intermediate the outside diameters of said guide tube and said catheter, said intermediate diameter being further selected so that when said first end of said tubular member is placed around the gauge end of said guide tube, a frictional, fluid tight seal is formed therebetween, and the second end of said tubular member forms a loose fit around said catheter, said tubular member being further adapted to be rolled axially back on a portion of itself at said second end to force said member frictionally against said catheter to hold said catheter and said guide tube in fixed relation, and to form a fluid tight seal therebetween.

4,325,388
APPARATUS FOR COLLECTING AND PROCESSING BODY FLUIDS

Louis Bucalo, 155 Roberts Street, Holbrook, N.Y. 11741

Continuation of Ser. No. 734,049, Oct. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 603,432, Aug. 11, 1975, Pat. No. 4,232,673, which is a continuation-in-part of Ser. No. 568,139, Apr. 14, 1975, Pat. No. 4,036,214, which is a continuation-in-part of Ser. No. 534,893, Dec. 20, 1974, Pat. No. 3,998,211, which is a continuation-in-part of Ser. No. 499,925, Aug. 23, 1974, Pat. No. 3,934,575, and Ser. No. 499,926, Aug. 23, 1974, Pat. No. 3,924,607, said Ser. No. 499,925, said Ser. No. 499,926, is a division of Ser. No. 329,862, Feb. 25, 1973, Pat. No. 3,842,166. This application Feb. 9, 1979, Ser. No. 10,885
Int. Cl.[3] A61B 17/42
U.S. Cl. 128—768 6 Claims



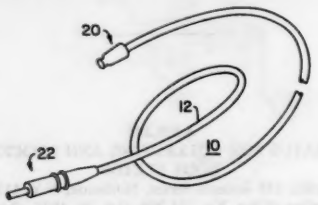
3. In an apparatus for obtaining information pertaining to human beings or other animals having body cavities wherein fluids from which the desired information can be derived are at least temporarily present, collecting means for automatically collecting a body fluid when said collecting means is situated in juxtaposition to a body cavity where the fluid is present, enclosure means for enclosing the collected fluid for transmittal to a laboratory or the like where the collected fluid is to be analyzed, said collecting means and enclosure means being provided with means for causing flow of the fluid from the collecting means to the enclosure means while substantially avoiding flow of the collected fluid by way of the collecting means back to the body cavity, said collecting means operating by capillary action to automatically collect fluid in the body cavity, said collecting means being in the form of a unit such as a wad of filamentary material, and said enclosure means including a container into which said collecting means partly extends for delivering collected fluid thereto, and closure means operatively connected to said enclosure means for closing said enclosure means not later than upon removal of the same from the body cavity so as to prevent contamination of body fluid in the enclosure means.

4,325,389

TIP ASSEMBLY FOR A CARBON FIBER IMPLANTABLE LEAD

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 22, 1980, Ser. No. 189,120
Int. Cl.³ A61N 1/04
U.S. Cl. 128—784 **6 Claims**



1. A tip assembly for an implantable carbon fiber lead having an outer cover disposed about a stylet tube and one or more carbon fiber bundles, each of said bundles having an insulating outer sheath and having an exposed carbon fiber tip at one end, comprising:

A. an electrode having a tip portion at one end, a contact portion, a neck portion interconnecting said tip and contact portions along a central axis, a post portion extending along said central axis from the end of said contact portion opposite to said neck portion, said neck portion having a small cross-sectional area relative to adjacent sections of said tip and contact portions, and said contact portion having a plurality of substantially planar lateral contact surfaces, and

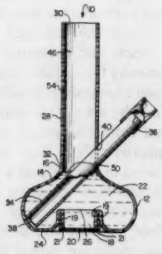
B. an electrically conductive, hollow cylindrical electrode housing member disposed about said post portion, said contact portion, and at least part of said neck portion wherein the interior surface of said electrode housing member includes a lip at its end nearest said post portion, and wherein said housing member includes a means for biasing said lip against said carbon fiber bundles and associated sheathing and said post portion, and for securing said exposed tips between a portion of said housing overlying said neck portion and said neck portion.

4,325,390

STABLE FLUIDIC SMOKING DEVICE

Richard W. Kahler, P.O. Box 1201, Cape Canaveral, Fla. 32920

Continuation-in-part of Ser. No. 699,372, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,941, Sep. 27, 1974, abandoned. This application Apr. 7, 1980, Ser. No. 137,844
Int. Cl.³ A24F 3/00, 3/02
U.S. Cl. 131—173 **13 Claims**



1. A self-supporting compact pipe comprising:

a substantially gibbous-like reservoir serving as a stable base member, said gibbous-like reservoir having an uppermost portion to support said pipe in an independently upstanding position and narrowing upwardly so as to form an open neck, a substantially flat bottom wall portion having annular wall means extending inwardly of said reservoir for defining a through-opening extending from the interior of said reservoir and through said bottom wall portion;

said through-opening having a diameter approximating at least one quarter the maximum diameter of said reservoir so as to provide easy access to said interior of said reservoir;

removable sealing means for sealing said through-opening defined within said bottom wall portion of said reservoir so as to permit a fluid to be retained in, or drained from, said reservoir,

a first hollow elongated cylindrical tube having upper and lower open ends, said lower open end being integrally secured to the perimeter of said open neck of said uppermost portion of said reservoir, and means defining an aperture through a sidewall surface of said first tube near the lower end of said first tube;

a second hollow elongated cylindrical tube having upper and lower open ends, said second tube being inserted through said first tube aperture such that said lower end of said second tube is directed downwardly into said reservoir and the upper end of said second tube projects outwardly of said first tube; and

smoking bowl means detachably connected to the top end of said second tube for retaining smoking tobacco and permitting smoke to pass into said second tube;

said smoking bowl and said second tube being detachably removable from said first tube and having outside diameters and lengths, respectively, less than the inside diameter and length of said first tube so as to permit said smoking bowl and said second tube to be inserted and stored within said first tube;

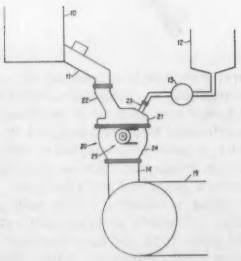
wherein smoke passing into said second tube is drawn through said fluid contained in said reservoir, and further drawn from said reservoir into, through, and out the upper end of said first tube.

4,325,391

INSTANTANEOUS SLURRY PREPARATION ON A CONTINUOUS BASIS

Otto K. Schmidt, South Windsor, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 1,248, Jan. 5, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,408
Int. Cl.³ A24B 3/14
U.S. Cl. 131—372 **11 Claims**



1. Apparatus for making a shapable tobacco/adhesive slurry having a high tobacco solids content, comprising

means for continuously providing a predetermined amount of dry comminuted tobacco;

means for continuously providing a predetermined amount

of aqueous adhesive proportional to the tobacco being provided; and

high intensity mixing means having two inlets, one for receiving tobacco and the other for receiving adhesives;

said high intensity mixing means having a slurry discharge, said high intensity mixing means causing a substantially instantaneous homogeneous slurry of the tobacco and adhesive, and rapidly discharging the slurry before it arrives at its equilibrium state.

4,325,392

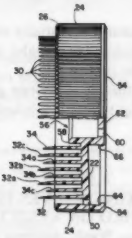
FACIAL BRUSH FOR CONTROLLING *PSEUDOFOLLICULITIS BARBAE*

Clemens A. Iten, Staunton, Va., and David O. Chase, Skaneateles, N.Y., assignors to American Safety Razor Company, Verona, Va.

Filed Jun. 4, 1979, Ser. No. 45,469

Int. Cl.[3] A45D *27/22*

U.S. Cl. 132—80 R **10 Claims**



1. Facial scrubbing brush for removing ingrown hairs from false follicles, comprising:

a base portion;

peripheral side support means connected to said base portion; and

a plurality of elongated discrete, resilient members connected to said base portion and disposed perpendicular thereto, including first members of a uniform height, each discrete first member being arranged exclusively in first concentric annular rows on said base portion such that said first concentric annular rows exclusively comprise said first members, and second members having a plurality of heights shorter than said uniform height, each discrete second member being arranged exclusively in second concentric annular rows on said base portion such that said second concentric annular rows exclusively comprise said second members, said first annular rows being separate and distinct from said second annular rows and at least one of said first annular rows being interspaced between a pair of said second annular rows, each of said discrete first members being sufficiently resilient and having a cross-sectional dimension sized to curl beneath and into loops of ingrown facial hair, and each of said discrete second members cooperating with said first members to dislodge said ingrown hairs as the brush is moved along the face, wherein said base portion is concave in a direction opposite to said elongated members and includes a plurality of first drainage means distributed about the periphery thereof.

4,325,393

HAIR STRAND SEPARATING IMPLEMENT

Louis N. Thomas, 990 NE. 156 Terrace, North Miami Beach, Fla. 33162

Filed Aug. 25, 1980, Ser. No. 180,693

Int. Cl.[3] A45D *24/00*

U.S. Cl. 132—160 **7 Claims**

1. A hair styling implement to facilitate the withdrawal of spaced groups of hair strands from the scalp for separate treatment, comprising, in combination, an elongated, substantially rectangular, hollow body member, a plurality of hook members journalled in spaced relation along one side of said body member, said hook members each being integrally formed with arcuate hook portions movable between withdrawn and outwardly-extended positions with respect to the underside of said

body member upon the rotation of said hook members with respect to said body member, the outer end of said hook portions, when in their withdrawn positions, lying in a plane substantially coincident with the plane of said underside of said body member, and means for simultaneously rotating said hook members for moving said arcuate hook portions between said withdrawn and outwardly-extended positions.

4,325,394

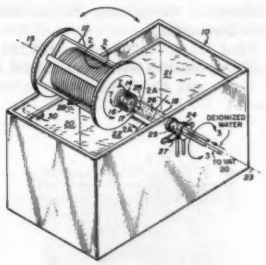
SUBMERSIBLE MOTOR CHEMICAL PROCESSING APPARATUS

Donald J. Reams, San Jose, Calif., assignor to Micro Air Systems, Inc., Santa Clara, Calif.

Filed Aug. 25, 1980, Ser. No. 180,611

Int. Cl.[3] B08B *3/04*

U.S. Cl. 134—141 **28 Claims**



1. Apparatus for chemically processing an item in a fluid bath comprising:

retaining means for retaining an item to be chemically processed, the retaining means having openings through which a processing liquid can pass and contact the surfaces of said item to be processed when the retaining means is positioned within a supply of processing liquid;

a continuous-rotation motor coupled to the retaining means for rotationally driving the retaining means about a first axis;

drive means engaged to the motor for supporting and moving the motor and retaining means in unison between a first position and a second position; and

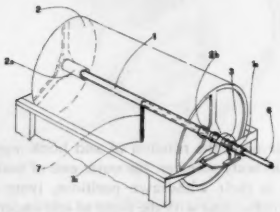
vat means forming at least one vat for supporting a supply of processing liquid, the vat means being positioned relative to the drive means to receive the motor with the retaining means attached thereto within the confines of the vat means when the motor and retaining means are adjacent said first position.

4,325,395

DEVICE FOR CLEANING ROTARY DRUMS, IN PARTICULAR FOR ROTARY DRUM FILTERS

Gaetano Ferrari, Parma, Italy, assignor to Indracos S.r.l., Parma, Italy

Filed Nov. 25, 1980, Ser. No. 210,366
Claims priority, application Italy, Dec. 4, 1979, 29018/79[U]
Int. Cl.³ B08B 3/02, 9/08
U.S. Cl. 134—152 3 Claims



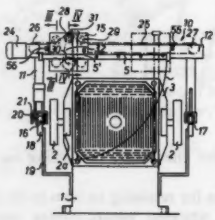
1. Improved device for cleaning rotary drums, in particular for rotary drum filters, characterized by the fact of comprising: a guide, fixed with respect to said drum (2), situated within the drum and parallel to the generatrix of the drum itself, said guide being of a length approximately equal to the length of the drum; a cursor, sliding along said guide; a nozzle (7), integrally connected to said cursor, situated with its discharging orifice close to the inner surface of said drum; a duct, communicating with the discharging orifice of said nozzle, one end of which protrudes from said drum and is connected to a source of fluid under pressure; and traversing means for sliding said cursor along said guide.

4,325,396

APPARATUS FOR CLEANING A FILTER PRESS

Gerd-Peter Gehrmann, Gerlafingen, Switzerland, assignor to Von Roll AG, Switzerland

Filed Jul. 1, 1980, Ser. No. 165,183
Claims priority, application Switzerland, Jul. 9, 1979, 6389/79
Int. Cl.³ B08B 3/02
U.S. Cl. 134—181 11 Claims



1. Apparatus for cleaning the plates of a filter press, comprising a support mounted above said press for movement along the longitudinal axis of said press, a trolley mounted on said support for reciprocal movement transversely to the axis of the press from one side to the other, a standpipe mounted on said trolley to swing between a horizontal position and a vertical position, and a unitary drive system for sequentially swinging said standpipe from said horizontal to said vertical position and for moving said trolley from said one side to the other and thereafter reversing the movement of said trolley and the swinging of said standpipe, said standpipe being mounted on a freely-swivelable shaft, journalled in said trolley to be normally dependent from the horizontal position, and said drive system including a motor and a transmission comprising first means mounted on said trolley coupled to said motor for idling therewith, and second means responsive to the displacement of said standpipe from the horizontal position, for securing said first means against idling, said first and second means being cooperable on the movement of said motor, in one direction, to permit said standpipe to be displaced into its vertical position and thereafter on securement of said first means to move said trolley across said support and on the movement of said motor, in the other direction, to maintain said first means secure—to reverse said trolley and thereafter to displace said standpipe in its horizontal position.

4,325,397

METHOD TO REDUCE PRESSURE DROP IN POLYAMIDE PROCESS PIPING

Robert A. Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 15, 1980, Ser. No. 178,319
Int. Cl.³ F17D 1/16
U.S. Cl. 137—13 3 Claims

1. A method to reduce pressure drop in polyamide process piping comprising

injecting a fluid consisting essentially of linear polyethylene glycol having a molecular weight above 10,000 around the periphery of the piping and

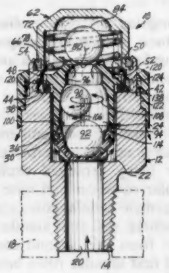
forming a coating of the polyethylene glycol on the internal surface of the piping where it lubricates the flowing polyamide.

4,325,398

SAFETY AND VENTING VALVES FOR FUEL TANKS CARRIED ON VEHICLES

Charles J. Green, Vashon, Wash., assignor to G. T. Corporation, Seattle, Wash.

Filed Jul. 21, 1980, Ser. No. 170,725
Int. Cl.³ F16K 17/36
U.S. Cl. 137—39 29 Claims



1. In a tank venting device,

wall means defining a spin chamber having internal generally circular cross sections;

at least one side wall inlet opening into said chamber being tangentially directed with respect to said chamber cross sections, said inlet adapted to be connected to a tank containing liquid;

a circular outlet opening at a normally upper end of said chamber;

a light weight buoyant ball in said chamber, said ball having a larger diameter than said outlet opening; and

means defining said chamber cross sections to prevent said light weight ball from seating in said outlet opening when said gas is venting, whereby gas venting through the spin chamber will spin the light weight ball around the chamber;

said light weight ball being adapted to be lifted to seat on said outlet opening when liquid enters said chamber to a

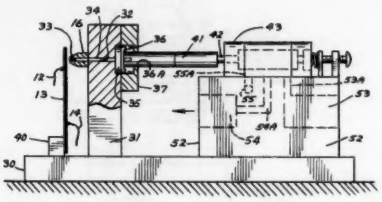
predetermined level to close said outlet opening and block liquid flow out through the outlet opening.

4,325,399

CURRENT TO PRESSURE CONVERTER APPARATUS

Roger L. Frick, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Nov. 15, 1979, Ser. No. 94,443
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **6 Claims**



1. A current to pressure converter apparatus including:
means providing an input electrical signal;
circuit means responsive to said input electrical signal to provide an output electrical signal;
a mounting block;
piezoelectric flapper means responsive to said output electrical signal including a flexture element having one end mounted on said block and having one free end, the amount of flexture of the free end being a function of the output electrical signal;
a housing mounted on said block having a movable wall defining a chamber;
a source of controlled fluid under pressure connected to said chamber;
a nozzle leading from said chamber, said free end being adjacent said nozzle to control discharge of fluid through the nozzle and control pressure in the chamber, and thereby control position of the movable wall as a function of the flexture of the flexture element;
fluid amplifier means mounted on said block adjacent said housing and having an outlet and including a valve spool movable to position to adjust the fluid pressure at the outlet of the fluid amplifier means;
bias means to urge the valve spool in a first direction;
means to mechanically couple the movable wall directly to said valve spool so movement of the movable wall in a second direction under changes in pressure causes the valve spool to move against the bias means thus controlling the position of the valve spool as a function of the amount of flexture of the flexture element and therefore of the output electrical signal; and
pressure feedback means connected directly to sense the fluid pressure at the output to provide an electrical feedback signal to said circuit means which is a function of the fluid pressure at the outlet to achieve a balance in the circuit means upon changes in the input signal.

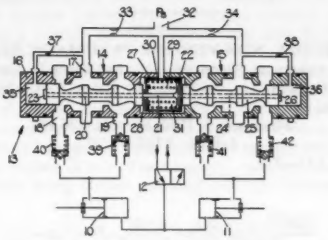
4,325,400

FLUID FLOW EQUALIZING VALVE ARRANGEMENT

John R. Wynne, 10 Firtree Rd., Finchfield, Wolverhampton, West Midlands, England

Filed Dec. 5, 1979, Ser. No. 100,295
Claims priority, application United Kingdom, Dec. 16, 1978, 48814/78
Int. Cl.³ F15B *11/02, 13/06*
U.S. Cl. 137—101 **6 Claims**

1. A fluid flow equalizing valve arrangement comprising first and second valve devices, each said device having first, second and third ports and a control element movable to increase or decrease flow in a flow path which includes said respective first and second ports and simultaneously in an opposite sense to decrease or increase flow in a path which includes said respective first and third ports, coupling means for operatively inter-connecting said control elements for movement in unison in respective opposite directions to increase or decrease flow in a first flow path through one of said valve devices and to decrease or increase flow in a corresponding second flow path through the other of said valve devices, means for connecting said first ports to a fluid pressure source, means for providing first and second intermediate pressures



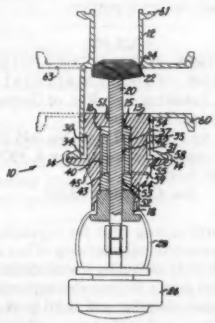
respectively dependent upon the flows in said first and second flow paths, first and second actuator means responsive to said first and second intermediate pressures respectively, said first and second actuator means being operable to urge said control elements in unison in respective ones of said opposite directions, said coupling means including resilient biasing means for urging said first and second elements to a predetermined relative position and for permitting relative movement between said elements when the pressure on either of said actuators exceeds a predetermined value.

4,325,401

ASEPTIC VALVE

Nobuo Ukai, Machida; Akira Funado, Funabashi, and Tethuya Yokota, Mathudo, all of Japan, assignors to Kagome Co., Ltd., Japan

Filed Sep. 7, 1979, Ser. No. 73,271
Claims priority, application Japan, Sep. 28, 1978, 53-118622
Int. Cl.³ F16K *51/00*
U.S. Cl. 137—240 **7 Claims**



1. An aseptic valve for use in regulating supply of a liquid foodstuff comprising, a valve body, a bonnet having a circumferential recess jointly with said valve body defining a first chamber, said bonnet having an axial recess, a bushing snugly fitting in said axial recess and having a circumferential recess jointly with surfaces defining said axial recess defining a second chamber and having an axial bore having a length thereof with a greater diameter between opposite ends of the bore, a valve stem extending axially through said bonnet and said bore

defining with the greater diameter of said bore a third chamber, a part of said bushing providing communication of said third chamber with said second chamber, means in said valve body defining an inlet and an outlet into said first chamber for supplying a sterilizing liquid therethrough, means in said valve bonnet defining an inlet and an outlet to said second chamber for supplying sterilizing liquid therethrough and through said third chamber, a valve disc on said valve stem for opening and closing the valve, and an actuator on said valve stem for actuating the valve stem to actuate the disc to positions for closing and opening the valve.

4,325,402

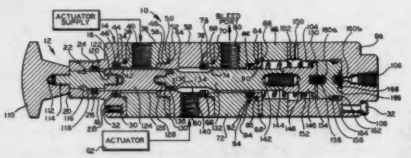
BIMODAL, NON-VENTING PNEUMATIC RELAY

Neil H. Akkerman, Kingwood, Tex., and Bruce D. Christensen, New Orleans, La., assignors to Baker CAC, Inc., Belle Chasse, La.

Filed Apr. 1, 1980, Ser. No. 136,193

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—270 **8 Claims**



1. A pneumatic control device comprising: a housing including a plurality of aligned, juxtaposed segments defining a centrally disposed bore, a fluid supply passageway, a fluid delivery passageway, a fluid exhaust passageway and a control fluid passageway in communication with said bore; a valve stem disposed within said central bore and translatable between a first position and a second position; means for biasing said valve stem toward said first position; a plurality of annular seals mounted on said housing and disposed about said valve stem; and means for retaining said seals in said housing including a like plurality of channels disposed in the walls of said centrally disposed bore wherein at least one of said channels is defined by a concentrically disposed enlarged diameter portion of said bore in one of said segments and an annulus projecting from the face of an adjacent one of said segments and nesting within said enlarged diameter portion.

4,325,403

SINGLE-CONTROL MIXING COCK WITH PLATES MADE OF HARD MATERIAL

Joachim Uhlmann, Leonberg, Fed. Rep. of Germany, assignor to Gevipi A.G., Triesen, Liechtenstein

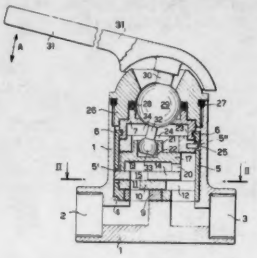
Filed Apr. 30, 1980, Ser. No. 145,236

Claims priority, application Italy, May 4, 1979, 44806 A/79; May 4, 1979, 44807 A/79

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **26 Claims**

1. A single-control mixing cock for regulating the delivery flow rate and the proportional admixing of hot and cold water comprising a cock body including a wall defining a chamber, first and second port means for introducing hot and cold water respectively into said chamber and third port means for discharging water from said chamber, a unitized replaceable bodily insertable and removable cartridge housed within said chamber, valve means within said cartridge for regulating the delivery flow rate and the proportional admixing of hot and cold water between said first and second port means and said third port means, a cap, means for removably securing said cap to said cock body, a control member for manually operating said valve means, means for mounting said control member upon and for articulate motion relative to said cap, aperture means in said cartridge for gaining access to said valve means, means for coupling said control member to said valve means through said aperture means whereby movement of the control member moves said valve means, and said articulate mounting means being further effective for connecting said control member to said cap for the unitized removal of said cap, control member and at least a portion of said coupling means passing through said aperture means upon the operation



of said removable securing means without destroying the unitized nature of said cartridge whereby upon the unitized bodily removal of said control member, said coupling means portion and said cap from said cock body said unitized cartridge and valve means therein can be likewise bodily withdrawn from said chamber.

4,325,404

VALVE CLAW TO BE SITUATED AT THE END OF A PIPE TO MOUNT A CLOSING VALVE

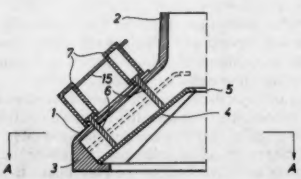
Peder M. Larsen, Hovedvagtsgade 6, 3.,, DK-1103 Copenhagen K., and Uffe M. Larsen, Soborg Hovedgade 74, DK-2860 Soborg, both of Denmark

Filed Aug. 22, 1979, Ser. No. 68,738

Claims priority, application Denmark, Aug. 30, 1978, 3822/78

Int. Cl.³ F16K *51/00*; F16L *37/28*

U.S. Cl. 137—316 **10 Claims**



1. A coupling for attachment to the end of a pipe, said coupling comprising: a generally bell-shaped housing open at its larger end so as to be adapted to fit over the end of the pipe; a pipe stub connected to the other end of the housing for receiving a closing valve, said pipe stub being in communication with the interior of the housing; a plurality of circumferentially-arranged radially movable conical segments within the housing which abut each other in edge-to-edge relationship along the whole extent of their edges when in their radially inward position; means for moving the segments radially inwardly to their abutting position; the segments having wide ends in sliding sealing engagement with the inner surface of the housing and each segment having a narrow end provided with at least one circumferentially gripping edge which faces radially inwardly for sealingly engaging and gripping the whole of the circumference of the pipe when the segment is in its radially inward position, there being a space between the inner surface of the housing and the outer surfaces of the segments, which space is in communication with the pipe stub whereby when the housing is secured to the outside of the pipe by the gripping edge on the segments any fluid pressure created by fluid escap-

ing from the pipe will act on the outer surface of the segments so as to hold the gripping edge in engagement with the outside of the pipe.

4,325,405

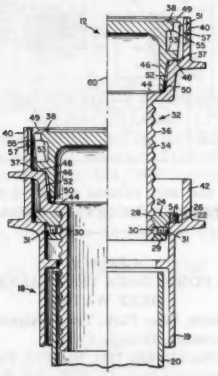
VALVE BOX ASSEMBLY

C. Louis Christo, 24 Hingham Rd., North Grafton, Mass. 01536

Filed Jan. 24, 1980, Ser. No. 115,004

Int. Cl.³ F16L *5/00*; E02D *29/14*

U.S. Cl. 137—371 **9 Claims**



1. A valve box assembly for plumbing comprising:

(a) a valve box having a vertical tubular portion provided with an upper annular substantially horizontal surface, the valve box having an external annular horizontal flange adjacent the upper horizontal surface thereof,

(b) a nut provided with internal threads and having an annular horizontal flange adapted to rest on the annular upper surface of the valve box,

(c) a riser having an elongated vertical tubular portion provided with external threads for threading into the nut, said riser having an upper annular horizontal surface,

(d) means for locking the nut to the valve box, and

(e) a cover having an annular flange for resting on the upper horizontal surface of the riser, and an annular vertical flange extending downwardly into the riser, the bottom end of the vertical cover flange being spaced from the inside surface of the riser, and

(f) an annular seal attached to the vertical flange and extending in a sealing relationship between the vertical flange and extending in a sealing relationship between the vertical flange and inside surface of the riser.

4,325,406

CONTINUOUS FLUID PRESSURE CONTROL DEVICE AND SYSTEM

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation of Ser. No. 943,852, Sep. 19, 1978, abandoned. This application Jul. 16, 1980, Ser. No. 169,277

Claims priority, application Israel, Sep. 20, 1977, 52,954

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—492.5 **5 Claims**

1. An adjustable fluid-pressure control system comprising in combination:

a fluid-operated control valve mountable in a fluid line, including obturating means and means movable within a control chamber for displacing said obturating means in response to pressure and,

a continuously acting spool-type pilot valve comprising

a housing having two parts removably inter-connected with each other, and having

a first opening communicating with a downstream portion of said fluid line;

a second opening communicating with an upstream portion of said fluid line;

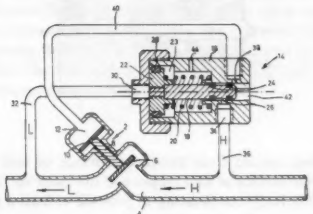
a third opening communicating with the control chamber of said control valve;

a first and a second venting opening leading to the outside of said pilot valve;

a flexible diaphragm clamped along its peripheral edge beteeen said housing parts, dividing the interior of said housing into a first and a second chamber;

a plate member disposed in said second chamber, slidably fitting a portion thereof, and abutting said flexible diaphragm;

an elongated member, one end of which abuts against, and is centered and rotatably supported by said plate member, said elongated member having adjacent to its other end two spaced-apart sealing means defining a fluid-tight third chamber between an outer surface of said member and an inner surface of one of said housing parts, said elongated member being further provided with an external thread



extending over at least a part of that portion of said member which is closer to said first end, and drive means at said second end permitting said member to be rotated from the outside of said pilot valve;

shoulder means disposed in said second chamber, having an internal thread by means of which it is at least partly threaded onto the threaded portion of said elongated member;

a spring disposed in said second chamber and interposed between said shoulder means and an abutment surface of said second chamber, said spring serving as a reference force, which force is adjustable by rotation of said elongated member;

the arrangement being such that when the fluid pressure in the downstream portion of said obturating means exceeds a predetermined value, said elongated member is moved in response to pressure at said first opening to alter the flow path between said third opening and one of the other openings of said housing to effect a change of pressure in said control chamber, whereby a controlled movement of said obturating means is effected to maintain the constancy of the pressure in said line.

4,325,407

PRESSURE CONTROL UNIT

Rolf Weiler, Ffm.-Sindlingen, and Bernd Schopper, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,695

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930476

Int. Cl.³ B60T *8/26*

U.S. Cl. 137—493.2 **17 Claims**

1. A pressure control unit comprising:

a housing having a bore therein coaxial of a longitudinal axis;

an inlet chamber disposed in said bore;

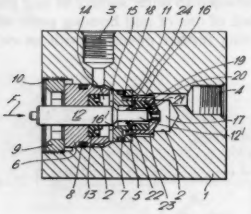
an outlet chamber spaced from said inlet chamber disposed in said bore; and

a valve arrangement disposed in said bore between said inlet chamber and said outlet chamber including a valve to close a first connection between said inlet chamber and said outlet chamber when a predetermined switching pressure determined by a control force applied to said valve is achieved and a check valve to open a second connection between said inlet chamber and said outlet chamber upon a pressure reduction in said inlet chamber relative to pressure in said outlet chamber;

said valve including

a tappet disposed coaxial of said axis biased by said control force toward said outlet chamber to establish said switching pressure,

a substantially cylindrical elastic body disposed coaxial of said axis in an operative association with and surrounding said tappet, the outer surface of said valve body



being spaced from the inner surface of said bore, the outer surface of said tappet and the inner surface of said valve body cooperating to provide at least a portion of said second connection, and

means surrounding said valve body to reinforce the outer surface thereof to prevent deformation of said valve body toward the inner surface of said bore,

said means being a cylinder enclosing said valve body, said cylinder being part of a cup-shaped cap having an open end directed toward said inlet chamber and a bottom in said operative association with said tappet, the end of said open end of said cap being a stop to limit the closing movement of said valve body,

said open end of said cap engaging an annular groove of a sleeve fixed in said bore adjacent said inlet chamber coaxial of said axis, said groove being parallel to said axis.

4,325,408

EXHAUST PRESSURIZATION OF LOAD RESPONSIVE SYSTEM

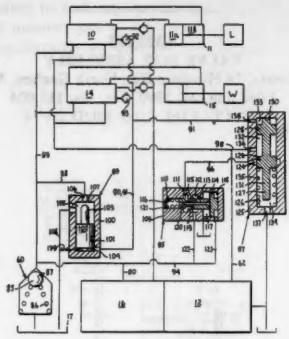
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 49,660, Jun. 18, 1979, Pat. No. 4,249,570. This application Jan. 26, 1981, Ser. No. 228,683

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—596.2 **8 Claims**

1. A fluid power and control system supplied with pressure fluid by a pump and connected to an exhaust manifold communicable with a reservoir, said fluid power and control system comprising a control valve assembly connected to said pump and said exhaust manifold, said valve assembly having first and second load chambers, positive load pressure sensing means, negative load pressure sensing means, isolating means responsive to pressure in said negative load pressure sensing means and operable to selectively disconnect said control valve assembly from said pump, and fluid replenishing means operable to interconnect for one way fluid flow said load chambers and said exhaust manifold, exhaust manifold pressurizing means, exhaust pressure relief valve means operably connected to said exhaust manifold, pressure reducing valve means interconnect-



ing said pump and said exhaust manifold and deactivating means of said pressure reducing valve means.

4,325,409

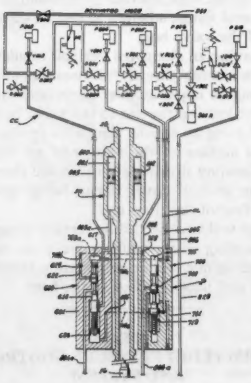
PILOT VALVE FOR SUBSEA TEST VALVE SYSTEM FOR DEEP WATER

William M. Roberts, Deer Park, Tex., assignor to Baker International Corporation, Orange, Calif.

Division of Ser. No. 843,154, Oct. 10, 1977, Pat. No. 4,234,043. This application Nov. 13, 1979, Ser. No. 93,752

Int. Cl.³ E21B *34/16;* **F15B** *11/16*

U.S. Cl. 137—596.14 **5 Claims**



1. A fluid pressure operated valve assembly for sequentially diverting a first fluid flowing therethrough and allowing the flow of a second fluid therethrough; comprising: first valve means having passage means therethrough for a first pressurized fluid and a diverting opening, a first valve member shiftable between a first position closing said diverting opening and a second position establishing communication between said diverting opening and said passage means, means responsive to first and second operating fluid pressures for holding said first valve member in said first position thereof and moving said

first valve member to said second position thereof; and second valve means having passage means therethrough for a second pressurized fluid, a second valve member shiftable between a first position closing said passage means for said second pressurized fluid and a second position opening the same, means responsive to said first and second operating fluid pressures for holding said second valve member in said first position thereof and moving said second valve member to said second position thereof, and means for conducting said first and second operating fluid pressures to said first and to said second valve means.

4,325,410

CONTROL DEVICE FOR A HYDRAULICALLY OPERATED LOAD

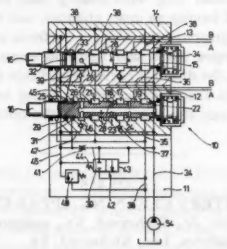
Wolfgang Bernhardt, Tubizer Str. 21, 7015 Konntal-Münchingen; Heinz Kleinschmidt, Bauernstr. 71, 7257 Ditzingen, and Joachim Heiser, Bockelstr. 92A, 7000 Stuttgart 75, all of Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,218

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804045

Int. Cl.³ F15B *13/04, 13/08*

U.S. Cl. 137—596.13 **10 Claims**



1. In a load independent flow control device for a hydraulically operated load, including at least one multiway control valve having a housing provided with a bore and a piston movable in said bore, said control valve defining at least one choke channel, a pressure fluid inlet channel connectable to a pump, a return channel connectable to a tank and a load channel connectable to a load, the control valve connecting via the choke channel, in an intermediate position of the piston, the load channel to the inlet channel, and in an end position of the piston, the load channel to the return channel, a combination comprising a manometer valve having a manometer piston biased at one end by a spring and connected at the other end to the inlet channel, a pressure difference across said choke channel being applied to both ends of the manometer piston to maintain a constant pressure difference across said choke channel, a first control conduit including a control choke and being connected to the inlet channel and, through said control choke and said control valve, to the return channel, said first control conduit having a branch conduit connected downstream of said control choke to the spring biased end of the manometer piston; an additional choke channel provided in said control valve and connectable, in said intermediate control position of the control valve piston in which the first-mentioned choke channel is effective and said first control conduit is open, to said branch conduit of said first control conduit to increase the spring bias on the manometer piston, the control valve piston being further movable into said end control position in which the first-mentioned choke channel is ineffective and the first control conduit is interrupted.

4,325,411

SEALS FOR GAS ISOLATORS

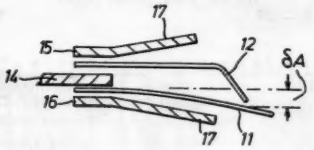
Anton F. Squirrell, Samstagern, Switzerland, assignor to Grovag Grossventiltechnik A.G., Glarus, Switzerland

Filed Sep. 15, 1980, Ser. No. 187,580

Claims priority, application United Kingdom, Oct. 12, 1979, 35497/79

Int. Cl.³ F16K *11/14*

U.S. Cl. 137—601 **5 Claims**



1. A seal for a gas isolator which comprises a cantilever leaf spring to be attached to one of a fixed frame and a movable member of the isolator and a bias spring acting on the leaf spring, wherein the leaf spring is not straight when unstressed whereby in the sealing position of the seal the stress induced in the bias spring will be the same as that induced in the leaf spring where the bias spring and the leaf spring seal have the same section modulus per unit length of seal.

4,325,412

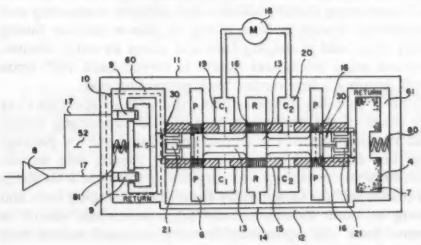
SINGLE STAGE HYDRAULIC VALVE

Paul Hayner, Gilford, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 11, 1980, Ser. No. 120,039

Int. Cl.³ F15B *13/044*

U.S. Cl. 137—625.65 **16 Claims**



1. A single stage hydraulic servo system with hydraulic fluid input, control and return ports, said hydraulic system is responsive to electric input signals, said system comprising:

(a) a valve spool that is positioned within a valve sleeve;

(b) means for moving said valve spool, said moving means being coupled to said spool and said electric signal so that the distance moved by said valve spool will be proportional to said electric signal;

(c) means for stabilizing said system from external accelerations of said system, said stabilizing means being coupled to the end of said spool; and

(d) means for centering said spool within said sleeve, said centering means being on the periphery of each end of said spool to insure that said spool will be centered along an imaginary line that passes through the center of said sleeve.

4,325,413
SUPPORTING SHEATH FOR A LONGITUDINALLY SHIRRED PACKAGING TUBE

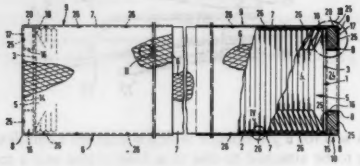
Richard Lenhart; Armin Köstner, both of Wiesbaden; Günter Gerigk, Oberursel, and Klaus-Jürgen Bittner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,201

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923188

Int. Cl.³ F16L *11/08, 11/10*

U.S. Cl. 138—109 **18 Claims**



1. A functional unit suitable for the manufacture of sausages, comprising:

a longitudinally shirred packaging tube; and

a supporting sheath surrounding said shirred packaging tube, said supporting sheath including:

a generally tubular shaped supporting sheath comprised of a thermoplastic synthetic resinous material and having an inside diameter slightly larger than the outside diameter of said shirred packaging tube and a length substantially greater than the length of said shirred packaging tube, so that when said shirred packaging tube is placed inside of said supporting sheath, two projecting ends of said supporting sheath remain;

a generally planar disk element on each of the projecting ends of said supporting sheath, each disk element including a central aperture therein, each of said disk elements having an outer diameter which is approximately equal to the diameter of said supporting sheath;

a first of said disk elements being slid with its aperture over one of the projecting ends of said supporting sheath and abutting against a first end of said shirred packaging tube contained in said supporting sheath, said first disk element contacting said supporting sheath at least along its planar surface facing away from said packaging tube and along its outer circumferential edge when said sheath is turned back 180° upon itself forming a first turned-back projecting end;

a second of said disk elements being slid with its aperture over the other of the projecting ends of said supporting sheath and abutting against the second end of said shirred packaging tube contained in said supporting sheath, said second disk element contacting said supporting sheath at least along its planar surface facing away from said packaging tube and along its outer circumferential edge when said sheath is turned back 180° upon itself forming a second turned-back projecting end; and

each of said turned-back projecting ends of said supporting sheath having a permanently form stable configuration produced by heat forming.

4,325,414
HOLLOW BODY ASSEMBLIES

Rudolf Schaefer, Brauerstrasse 35, D-4100 Duisburg 1, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,562

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927040

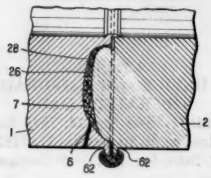
Int. Cl.³ F16L *9/22*

U.S. Cl. 138—155 **19 Claims**

1. A hollow body assembly comprising:

at least first and second individual elements, having longitudinal axes, adapted for connecting together to form said hollow body, at least one of said elements having a tongue on its connecting surface and the other element having a groove on its connecting surface for mating with said tongue thereby forming an annular cavity between said tongue and the surface of said groove when said individual elements are connected, the axial distance between said tongue and the surface of said groove being greater near the center of said tongue than at the edges thereof;

first and second circumferential flanges disposed on said first and second elements, respectively, at said connecting surfaces, each of said flanges having a transverse outer



face perpendicular to said longitudinal axis and an inner face, said inner face being oblique to said transverse direction so that the width of said flange in the axial direction increases toward the base of said flange; and

a circumferential ring surrounding said first and second flanges and having an inner channel, said ring having side edges for gripping the oblique surfaces of said first and second flanges when said first and second elements are connected, the distance between said side edges when said ring is in its unstressed condition being less than the distance between the base points of the oblique surfaces of the flanges.

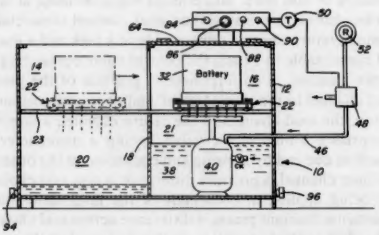
4,325,415
BATTERY CLEANING APPARATUS

Gordon G. Miller, Jr., Richmond, Va., assignor to Gordon G. Miller & Associates, Inc., Richmond, Va.

Filed Apr. 15, 1980, Ser. No. 140,429

Int. Cl.³ B08B *3/02;* B65B *3/02;* B67C *1/00*

U.S. Cl. 141—1 **13 Claims**



1. An apparatus for cleaning the interior of the cells of an electrolytic battery, comprising:

a wash tank;

a cleaning solution disposed in said wash tank;

battery support means for supporting said battery in an inverted position over said wash tank; and

cleaning fluid spray means for spraying said cleaning fluid and drying air into the individual cells of said battery including,

a pressure tank immersed in said cleaning fluid, valve means for filling said pressure tank with the fluid in the wash tank, spray manifold means connected to said pressure tank for directing the fluid into the cells of the battery and

pressure means for applying pressure to said tank forcing said fluid and drying air through said spray manifold means.

4,325,416

APPARATUS FOR DETERMINING AND/OR CONTROLLING A FIXED FILLING LEVEL IN A CONTAINER

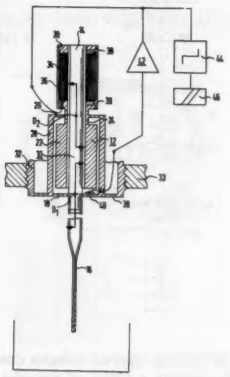
Eberhard F. Hermann, Sonnenweg 3, D7888 Rheinfelden-Eichsel, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,549

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933618

Int. Cl.³ B65B *3/26*

U.S. Cl. 141—95 **21 Claims**



1. An apparatus for determining the fill level of material in a container, comprising: a vibrating structure having first and second vibrator elements whose vibrations are attenuated when engaging filling material present in the container, one of said vibrator elements being arranged coaxially with respect to the other vibrator element and at least partially surrounding said other element in spaced relation thereto, both of said vibrator elements being flexibly mechanically coupled for individual oscillatory vibration in a common plane about mutually spaced axes, and being so dimensioned and configured to have the same no-load resonant frequency, means for exciting said elements into vibration of mutually opposite directional phase, the first of said vibrator elements extending downwardly and adapted to engage material in the container to implement determining the fill level thereof.

4,325,417

CONNECTOR MEMBER FOR SEALED CONDUITS UTILIZING CRYSTALLINE PLASTIC BARRIER MEMBRANE

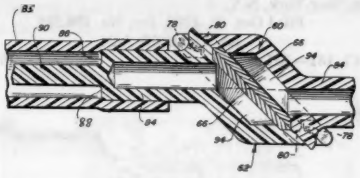
Daniel R. Boggs, Vernon Hills; Peter C. Kwong, Palatine, and Dean G. Laurin, Lake Zurich, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1979, Ser. No. 27,575

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—98 **22 Claims**

15. A connector element for providing sealed connection with a second connector element of similar design, said connector element comprising a hollow, transparent housing communicating with a conduit member, the hollow interior of said housing being sealable from the exterior, some of the wall of said housing comprising an opaque wall portion separating the hollow housing interior from the exterior and sealable by connection to said second connector element with said opaque wall portion in facing contact with a corresponding opaque wall portion of the second connector element, said facing opaque wall portions being adapted to be openable by exposure to radiant energy from the exterior through said transparent housing, and retention means carried by the connector



element for retention to said second connector element, the improvement comprising, in combination:

said opaque wall portion being made of a significantly crystalline thermoplastic material.

4,325,418

APPARATUS FOR FILLING CONTAINERS

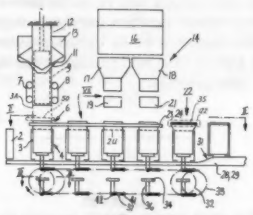
Karl Henle, Reinbek, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,543

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907015

Int. Cl.³ B65B *43/42*

U.S. Cl. 141—182 **13 Claims**



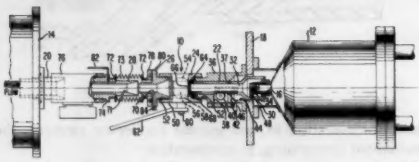
1. Apparatus for transferring a flowable material into successive containers having open ends, comprising means for transporting containers along a predetermined path; a metering device located above a portion of said path and arranged to accumulate and discharge metered quantities of flowable material; a receptacle disposed intermediate said metering device and a container in said portion of said path and having a bottom wall and a material evacuating opening, said receptacle being movable between a first position in which said wall is closely adjacent to said metering device to receive a metered quantity of material and a second position in which said opening is at least closely adjacent to the open end of a container in said portion of said path at a level below said wall and said wall slopes downwardly so that the metered quantity of material enters the container in said portion of said path by sliding off said wall and by passing through said opening; means for moving said receptacle between said positions; a mobile closure for the opening of said receptacle; and means for moving said closure with reference to said bottom wall to a closed position not later than when said receptacle assumes said first position so that the opening is closed during admission of a metered quantity of material and to an open position not later than when said receptacle assumes said second position so that the material which slides off said bottom wall can pass through said opening.

4,325,419

APPARATUS FOR TRANSFERRING PURE ABRASIVE MATERIAL FROM ONE HOPPER TO ANOTHER

Nicholas F. Gubitose, Moosic, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,591
Int. Cl.[3] B65B *1/28*
U.S. Cl. 141—302 10 Claims



1. Apparatus for transferring material from one hopper to another, said apparatus comprising:

first funnel means having a passage therethrough, said first funnel means having a valve member adjacent one end and being adapted to be mounted adjacent to the bottom of the one hopper with the passage in communication with a feed opening in the bottom thereof, said first funnel means being movable between a first position wherein said valve member closes the feed opening and a second position wherein said valve opens the feed opening;

valve means adjacent the other end of said first funnel means, said valve means being movable between a closed position preventing flow from the passage and an open position allowing flow from the passage; and,

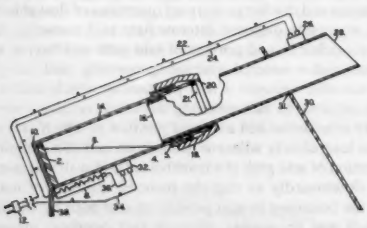
collector means between said other end of first funnel means and said valve means, said collector means being movable between a closed position overlying said passage when said valve means is in its closed position and an open position spaced from said passage when said valve means is in its open position.

4,325,420

APPARATUS FOR PREPARING WOOD FOR BENDING

Haskel Zeloof, 42 Bentley Ave., Trenton, N.J. 08619

Filed Dec. 3, 1979, Ser. No. 99,859
Int. Cl.[3] B27H *1/00*
U.S. Cl. 144—271 9 Claims



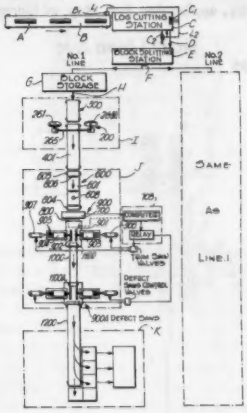
1. Improved apparatus for boiling water and steaming wood in preparation for bending, comprising tube means for holding a mass of water, said means having an open and a closed end, a front leg supporting the open end at an elevation above the closed end, heater means positioned in heat transfer relation to said closed end for boiling said water; wherein the improvement comprises means for terminating the action of said heater means on a predetermined reduction of the mass of water.

4,325,421

METHOD AND APPARATUS FOR CUTTING AND TRIMMING SHINGLES

Michael Janovick, P.O. Box 1444, Ladysmith, British Columbia, Canada (V0R 2E0); Donald F. Hammond, P.O. Box 975, and Winston Harvey, both of Lake Cowichan, British Columbia, Canada (V0R 2G0)

Filed Nov. 30, 1979, Ser. No. 98,941
Claims priority, application Canada, Dec. 5, 1978, 317403
Int. Cl.[3] B27C *9/00*
U.S. Cl. 144—326 R 28 Claims



1. A method of making tapered shingles comprising:

(a) clampingly holding a block of material to be cut into shingles;

(b) conveying the block, while it is clamped, along a selected path through the clamping mechanism;

(c) causing relative movement between a first cutting means and the clamped block to cut a first shingle from the leading face of the block tapering in thickness in one direction relative to the length of the shingle; and

(d) causing relative movement between a second cutting means and the clamped block to cut a second shingle from the block tapering in thickness in a direction opposite to that of the first shingle, said first and second cutting means cutting respectively along planes inclined relatively to one another and traversing the path of travel of the block.

4,325,422

PNEUMATIC TIRE AND WHEEL RIM ASSEMBLIES

Michael R. Corner, Coventry; Ian Kemp, Tamworth; Barrie J. Allbert, and Tom French, both of Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England

Filed Dec. 13, 1979, Ser. No. 103,390
Claims priority, application United Kingdom, Dec. 29, 1978, 50351/78
Int. Cl.[3] B60C *15/02, 3/00;* B60B *21/00*
U.S. Cl. 152—352 R 13 Claims

1. A pneumatic tire and wheel rim assembly comprising:

a tire having a reinforced tread portion, a pair of sidewalls and a pair of axially spaced tire beads each with a substantially inextensible bead reinforcement;

a wheel rim having a pair of axially spaced bead seats defined by grooves in each of which a respective one of said tire beads is located, each groove comprising a base portion and a pair of opposed side portions which extend in a generally radially outwards direction from said base portion;

said reinforced tire tread portion having an axial width greater than the axial distance between the axially outer side portions of said grooves;

each of said side portions projecting radially outwards beyond the radially inner surface of the adjacent inextensible bead reinforcement whereby each tire bead is retained against movement in an axial direction, each rim bead seat having means in engagement with the associated tire bead to restrict rotation of said tire bead relative to said rim bead seat.

4,325,423

PNEUMATIC TIRES, ESPECIALLY BELTED TIRES

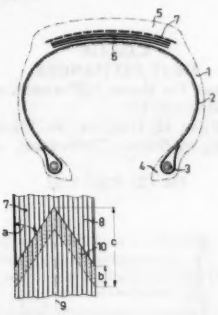
Hans Seitz, Langenhagen, and Heinrich Huinink, Garbsen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,427

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916445

Int. Cl.³ B60C *9/22*; B29H *17/10*

U.S. Cl. 152—361 R **10 Claims**



1. A pneumatic tire including a belt, having a carcass and a tread, said tire comprising an annular bandage-like reinforcing insert which is pull-resistant in the peripheral direction of said tire, extends essentially over the width of said tread, and is arranged between said tread and said carcass, in position between said tread and said belt, said reinforcing insert including pull-resistant strength carriers in the form of threads, cords, cables, strands, and the like arranged in at least one cord fabric strip and essentially extending in the peripheral direction of said tire, said reinforcing insert having at least one overlapping area constant over the width of said belt and extending at an angle to the peripheral direction of said tire to unite said at least one cord fabric strip into an annular body, said overlapping area including segments inclined to the peripheral direction of said tire on both sides of the center line of said tire in such a way as to be also essentially symmetrical to the center line of said tire both sides of the center line.

4,325,424

SYSTEM AND PROCESS FOR ABATEMENT OF CASTING POLLUTION, RECLAIMING RESIN BONDED SAND, AND/OR RECOVERING A LOW BTU FUEL FROM CASTINGS

Karl D. Scheffer, 121 Governor Dr., Scotia, N.Y. 12302

Filed Mar. 14, 1980, Ser. No. 130,256

Int. Cl.³ B22D *23/00, 27/15*

U.S. Cl. 164—5 **11 Claims**

1. An improved mold system for no-bake casting mold assemblies comprising a cope, a drag and a no-bake foundry sand composition including an organic binding material, the improvement comprising

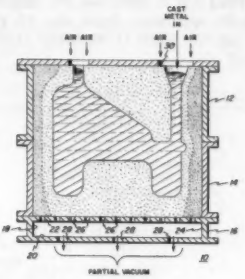
a vacuum plenum member;

a mold assembly disposed on the vacuum plenum and oriented therewith so that the bottom surface of the mold assembly has good air and gas communication means with the vacuum plenum;

a vacuum source means;

conduit means joining the vacuum source means to the vacuum plenum member;

the vacuum source means when operative induces the ambient about the mold assembly to flow through the mold and into the vacuum plenum member;



means for collecting a low BTU content gas comprising gaseous products and condensate matter evolved by the mold assembly into the vacuum plenum member;

means for mixing combustion air with the low BTU content gas to form a combustable mixture, and

means for burning the combustible mixture to generate thermal energy.

4,325,425

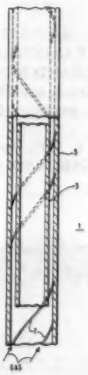
METHOD FOR LIMITING HEAT FLUX IN DOUBLE-WALL TUBES

Jaw-Yeu Hwang, Tampa, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,599

Int. Cl.³ F28F *27/00*

U.S. Cl. 165—1 **4 Claims**



1. A method of limiting the heat flux in a portion of a double-wall tube having an inner and outer wall, said method comprising the steps of:

heat treating the tube so that the outer wall separates from the inner wall as a differential temperature across the tube reaches a predetermined level; and

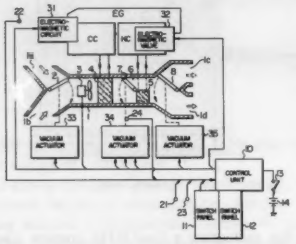
supplying a mixture of gases between the tube walls;

whereby the greater the differential temperature the greater the separation between the tube walls and the greater the thermal resistance of the tube and gas mixture.

4,325,426
AIR CONDITIONER SYSTEM

Fumio Otsuka, Kariya; Teiichi Nabeta, Okazaki; Yasufumi Kojima, Gifu; Takeo Matsushima; Yasuhiro Fujioka, both of Toyota, and Eiichi Wada, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 5, 1980, Ser. No. 156,797
Claims priority, application Japan, Jun. 12, 1979, 54/74420
Int. Cl.³ F25B *13/00*; G05D *15/00*
U.S. Cl. 165—2 5 Claims



1. In an air conditioner system for an automotive vehicle having means for adjusting the amount of heat radiated into a compartment of an automotive vehicle, means for sensing an actual temperature of said vehicle compartment, means for establishing a desired temperature of said vehicle compartment, and control means for determining an amount of adjustment of said adjusting means in accordance with controlling conditions including said actual temperature sensed by said temperature sensing means and said desired temperature established by said establishing means, the improvement wherein said control means includes:

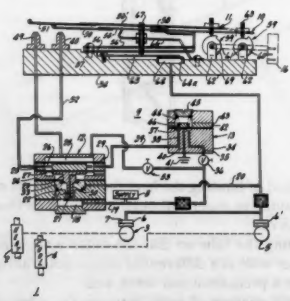
means for temporarily increasing said amount of adjustment to vary the temperature of said vehicle compartment to exceed said desired temperature; and

means for terminating said increase in said amount of adjustment after said sensed actual temperature has reached or nearly reached said desired temperature.

4,325,427
DUAL THERMOSTAT CONTROL APPARATUS WITH DEAD BAND RESPONSE

Scott B. Bramow, Oak Creek, and Thomas M. Holloway, Mukwonago, both of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Filed Nov. 6, 1979, Ser. No. 92,417
Int. Cl.³ F25B *29/00*; G05D *23/00*
U.S. Cl. 165—27 18 Claims

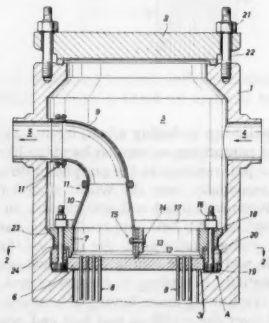


1. A dual thermostatic control apparatus for actuating a heating and cooling apparatus to condition air in a conditioned space, comprising temperature responsive means establishing first and second varying level signals having a level which changes over a signal range with changes in temperature, signal limit means to limit the first of said signals to a selected maximum reference level within said signal range, means coupled to said temperature responsive means and to said signal limit means to compare the level of said signals and establishing an output signal for operating said heating and cooling apparatus and providing heating when one of said signals is to one side of said reference level and cooling when the other of said signals is to the other side of said reference level to produce an automatic switchover between cooling and heating in accordance with the relative level of said signals with respect to said reference level.

4,325,428
HEAT EXCHANGER

Pieter J. Schuurman, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 15, 1980, Ser. No. 112,261
Claims priority, application Netherlands, Jan. 30, 1979, 7900710
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—72 6 Claims



1. A heat exchanger comprising:

an outer shell or housing adapted to be opened at one end for installing a tube bundle therein,

a tube bundle of a plurality of parallel tubes,

a tube plate having the ends of the parallel tubes secured thereto and being of a diameter to be positioned within the shell,

a seating surface formed on the inner wall of said shell and displaced axially from the open end thereof, said seating surface forming stop means against which the tube plate of the tube bundle can be pressed, said seating surface having a diameter less than that of the tube plate,

collar means formed on the inner wall of said shell above or to the open-end side of said seating surface and being displaced axially from the open end thereof a distance less than that of said seating surface, said collar means having a diameter greater than that of said tube plate,

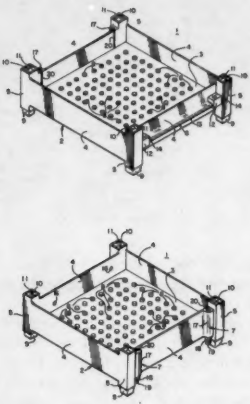
a gland flange positioned against one side of the tube plate while the opposite side of the tube plate is positioned on said seating surface in the shell, and

connector means operatively carried within the outer shell of the heat exchanger for securing the tube plate and land flange to the inner wall of said shell adjacent said collar means.

4,325,429
UNITARY BATTERY FORMATION TUB

William G. Bevan, Birdsboro, Pa., and Larry L. Sterling, Frankfort, Ind., assignors to General Battery Corporation, Reading, Pa.

Filed May 27, 1980, Ser. No. 153,407
Int. Cl.[3] F28F *25/02, 9/26*
U.S. Cl. 165—80 E 19 Claims



1. An apparatus for forming a plurality of batteries in a cooling fluid, the apparatus comprising:

(a) a fluid containing body having a base and opposing side walls;

(b) fluid inlet means positioned externally of a first side wall of the fluid containing body and including first manifold means associated with the first side wall and having an orifice which communicates with the fluid containing body; and

(c) fluid outlet means positioned externally of a second side wall of the fluid containing body and including second manifold means associated with the second side wall and having an aperture which communicates with the fluid containing body;

(d) wherein the fluid inlet means includes fluid input means and the fluid outlet means includes fluid drain means; and

(e) wherein the fluid containing body is capable of being stacked with at least another fluid containing body to form a vertical array in which the fluid inlet means of a lower fluid containing body is aligned substantially directly beneath the fluid drain means of an upper fluid containing body.

4,325,430
HEAT RECAPTURE DEVICE

Marlin V. Husa, Liberty, Nebr. 68381

Filed Nov. 17, 1980, Ser. No. 207,253
Int. Cl.[3] F28D *7/02;* F28F *13/00;* F24B *7/00*
U.S. Cl. 165—135 7 Claims

1. A device for recapturing heat from a combustion exhaust stack comprising:

(a) a first conduit open at either end to allow the passage of combustion exhaust gases;

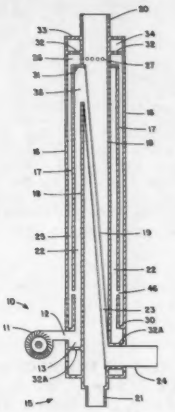
(b) connection means for sealingly connecting said first conduit to the combustion exhaust stack;

(c) a second conduit concentrically positioned around said first conduit, in uniform spaced relation thereto, and sealingly attached to the periphery of said first conduit by second conduit baffle plates positioned at either end of said second conduit, to form a conditioning air chamber;

(d) at least one transverse air duct intersecting and passing transversely through said first conduit and sealingly attached to the walls of said first conduit wherein said transverse air duct has a first end and a second end and wherein said first end is in fluid communication with said conditioning air chamber, and wherein said second end is in fluid communication with a conditioning air dispensing means;

(e) at least one conditioning air intake port in fluid communication with said conditioning air chamber and the ambient air;

(f) air forcing means for producing a conditioning airflow through said intake port, said conditioning air chamber, said transverse air duct and said conditioning air dispensing means said device further comprising a third conduit concentrically positioned around said second conduit in



uniform spaced relation thereto, wherein said third conduit extends axially in either direction beyond the ends of said second conduit and wherein the ends of said third conduit are sealingly connected by third conduit baffle plates to the periphery of said first conduit to form an insulating air chamber; and wherein said insulating air chamber is in fluid communication with the ambient air through an insulating air intake means positioned near the lower end of said insulating air chamber and wherein said insulating air chamber is in fluid communication with the combustion exhaust gases through an insulating air exhaust means positioned near the upper end of said insulating air chamber.

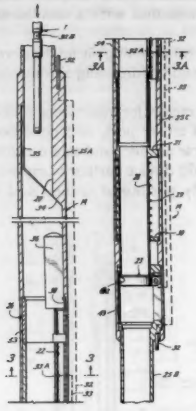
4,325,431
FLOW CONTROLLING APPARATUS

Neil H. Akkerman, Kingwood, Tex., assignor to Ava International Corporation, Houston, Tex.

Filed Jul. 10, 1980, Ser. No. 168,435
Int. Cl.[3] E21B *23/03, 34/10*
U.S. Cl. 166—117.5 16 Claims

1. A subsurface safety valve, comprising a mandrel having a bore therethrough whose axis is adapted to be substantially aligned with the axis of a tubing string when the mandrel is connected as part of the string, and a pocket to one side of the bore having an end which opens to the bore, a closure member mounted within the mandrel for movement between positions opening and closing the bore, means yieldably urging the closure member to its closed position, a tool adapted to be moved vertically through the tubing string and open end of the pocket into and out of a landed position within the pocket, and including means which is responsive to the supply of control

fluid thereto, when said tool is landed in the pocket, for moving the closure member to open position, and means through



which control fluid may be supplied from a remote source to said closure member moving means.

4,325,432

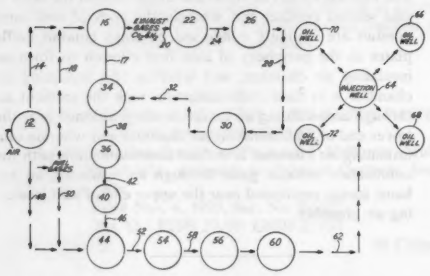
METHOD OF OIL RECOVERY

John T. Henry, 611 E. Market St., Farmer City, Ill. 61842

Filed Apr. 7, 1980, Ser. No. 138,098

Int. Cl.³ E21B *43/24*; B01D *53/00*

U.S. Cl. 166—245 **9 Claims**



1. A method of recovering petroleum from a subterranean petroleum-containing formation, comprising: providing an injection well containing a flow path in fluid communication with at least a portion of the petroleum-containing formation, providing combustion byproducts from an internal combustion engine, rendering the combustion byproducts relatively inert by contacting same with manganese and/or manganese dioxide, pressurizing the combustion byproducts to about 1,500 p.s.i., heating the combustion byproducts to a predetermined temperature of at least 400° F., adding fuel gas to the combustion byproducts at the same time that they are heated to a predetermined temperature, and injecting the combined combustion byproducts and fuel gas into the petroleum-containing formation to increase the volume of the petroleum, to heat the petroleum to reduce the viscosity thereof to enhance the flow of the petroleum and to pressurize the petroleum to help force it to the production well so as to increase the recovery of petroleum from the petroleum-containing formation.

4,325,433

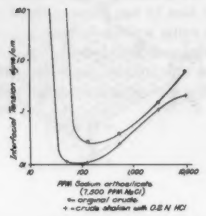
PRE-CAUSTIC FLOOD TREATMENT

Teh Fu Yen, Altadena, and Mankin Chan, Los Angeles, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Jun. 27, 1980, Ser. No. 163,531

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **21 Claims**



1. A process for the recovery of oil from a subterranean oil-bearing formation, penetrated by spaced injection and production wells, comprising:

introducing into said formation an aqueous solution of acid selected from mineral acids and organic acids having less than 5 carbon atoms per molecule, whereby to potentiate at least portions of oil in said formation to recovery by alkaline flooding; and

thereafter introducing floodwater into said formation to displace oil into said production well said floodwater consisting essentially of an aqueous alkaline solution.

4,325,434

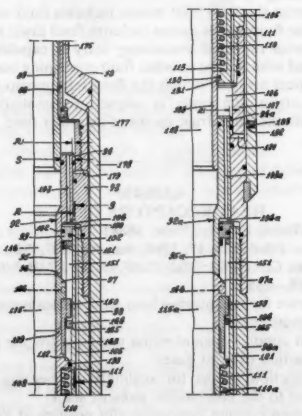
TUBING SHUT OFF VALVE

William M. Roberts, Deer Park, Tex., assignor to Baker International Corporation, Orange, Calif.

Division of Ser. No. 843,154, Oct. 10, 1977, Pat. No. 4,234,043. This application Nov. 13, 1979, Ser. No. 93,749

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—321 **21 Claims**



1. A subsea tubing shutoff valve assembly adapted to be connected to a tubular string and lowered and raised from the surface of the water, comprising: a tubular body structure connectible at its upper end to an upwardly extended portion of said tubular string; means at the lower end of said body structure releasably connectible with the upper end of a down-

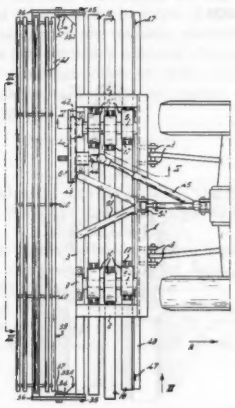
wardly extending portion of the tubular string; valve means in said body including a member shiftable between a first position opening said valve means and permitting the flow of fluid through said body and a second position closing said valve means and preventing such flow; control fluid pressure responsive means for holding said valve member in said first position; means for supplying control fluid to said valve means; means for moving said valve member to said second position upon relief of control fluid pressure; means for supplying operating fluid pressure to said valve means; control means comprising subsea pilot valve means for relieving said control fluid pressure and applying said operating fluid pressure; each of said means for supplying control fluid and operating fluid pressure including fluid conduit means extending from the surface of the water to said pilot valve means; and pilot valve control means at the surface of the water for operating said pilot valve means; and accumulator means providing a subsea source of said operating fluid controlled by said valve means.

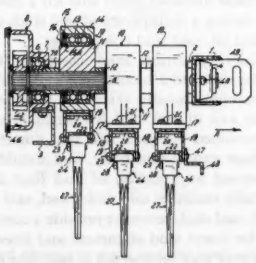
4,325,435

DRIVE TRANSMISSIONS FOR USE IN AGRICULTURAL IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 841,976, Oct. 13, 1977, abandoned.
This application Jun. 26, 1979, Ser. No. 52,146
Claims priority, application Netherlands, Oct. 15, 1976, 7611396
Int. Cl.³ A01B *19/06*
U.S. Cl. 172—102 **6 Claims**





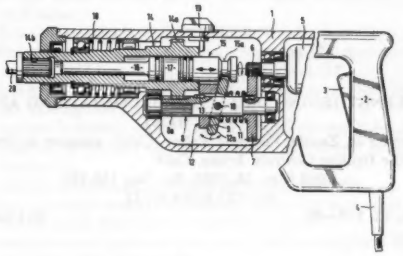
1. A drive transmission for an agricultural implement comprising a frame and a plurality of elongated transverse composite beams supported on said frame and tine means depending from each of said beams, driving means, including a rotary driving shaft and a rotatable driven shaft, connected to each of said beams through respective eccentric mechanisms, each mechanism including an eccenter disc and a bearing, the eccenter discs being mounted along the lengths of the two shafts and said bearings surrounding said eccenter discs, said mechanisms being connected to corresponding beams through said bearings and said driving shaft being positioned for engagement by an input, said driving shaft and its respective eccentric mechanisms being connected to rotate said driven shaft through said beams and the eccentric mechanisms mounted along the length of said driven shaft, said two shafts being spaced apart and extending transverse to said beams, the opposite ends of said shafts being supported by transverse frame members that extend substantially parallel to one another, said members being interconnected to each other by further frame members that extend generally in the direction of implement travel and said further frame members being located laterally of the outer sides of said shafts, said composite beams being positioned below and within an enclosed portion of the frame formed by said frame members and further frame members, each beam comprising two separate beam members of channel-shaped cross-section with limbs, one of said beam members being nested inside the other, the limbs of said beam members projecting downwardly from their bases.

4,325,436

HAMMER DRILL OR CHIPPING HAMMER DEVICE

Martin Richter, Freising, and Wolfgang Regelsberger, Munich, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 21, 1980, Ser. No. 143,856
Int. Cl.³ B25D *11/04, 11/06*
U.S. Cl. 173—13 **9 Claims**



1. A device for use as a hammer drill or chipping hammer including a housing, an axially elongated working cylinder positioned within said housing and having a front end and a rear end, a percussion mechanism located within said working cylinder, means for operating said percussion mechanism, said percussion mechanism comprising an actuating piston mounted and reciprocally movable within said working cylinder, a percussion piston located within said working cylinder between said actuating piston and the front end of said working cylinder, said percussion piston being spaced axially from said actuating piston forming an air cushion therebetween so that the reciprocating action of said actuating piston is transmitted via the air cushion to said percussion piston, said operating means comprising a driving shaft spaced laterally from said working cylinder, and a disk mounted on said driving shaft and disposed in contact with said actuating piston, wherein the improvement comprises that said disk extends transversely of said driving shaft and includes an axle pivotally connecting said disk to said driving shaft so that the plane of said disk relative to the axis of said driving shaft can be angularly displaced for effecting variable axial displacement of said actuating piston within said working cylinder, and a control member positioned on and rotatable with said driving shaft, and said control member being displaceable in the axial direction of said

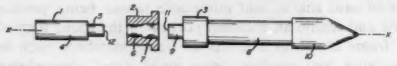
driving shaft for movement into contact with said disk for pivotally displacing said disk relative to the axis of said driving shaft.

4,325,437

ANVIL WITH TRAPPED FLUID

William S. Swindall, Cambridge, Canada, and Anil Mahyera, Salt Lake City, Utah, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,739
Int. Cl.³ B25D *9/04*
U.S. Cl. 173—131 **4 Claims**



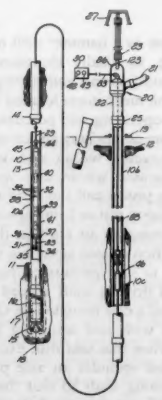
1. In a hydraulic impactor of the type in which a coupling having a stepped through bore transfers energy through a liquid from a reciprocating piston to a driven member by having an extending nose portion of the piston impact upon a liquid within the coupling when the nose portion enters the bore from one end while an extending stem portion of the driven member is slidably received within the other end of the bore the improvement comprising, said nose portion having the cross sectional area of the portion thereof having the largest cross sectional area equal to the cross sectional area of the largest cross sectional portion of said stem portion times the quantity equal to the square root of the weight of said piston divided by the weight of said driven member.

4,325,438

LENGTHENING DRILL STRING CONTAINING AN INSTRUMENT

Bernard R. Zuvela, Fountain Valley, Calif., assignor to Scientific Drilling Controls, Irvine, Calif.

Filed Mar. 24, 1980, Ser. No. 133,319
Int. Cl.³ E21B *47/12*
U.S. Cl. 175—50 **36 Claims**



1. Apparatus comprising:

a drill string including a series of interconnected pipe sections;

an instrument contained in said string;

a flexible conductive line connected electrically to said instrument and extending toward the surface of the earth;

a unit at the surface of the earth electrically connected to said flexible line; and

a carrier contained in the string and carrying a portion of said flexible line in the form of a coil of many turns occupying a distance longitudinally of the drill string shorter than the length of the coiled portion of the line;

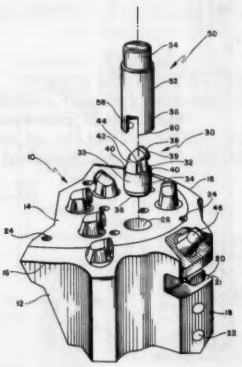
said coil being so wound as to pay out different turns of said coil successively from the carrier, and from coiled condition to a straightened condition, in response to exertion of a pulling force longitudinally of the drill string between said carrier and line while the carrier is contained in the string, to thereby increase the effective length of the line and compensate for addition of a pipe section to the string.

4,325,439

DIAMOND INSERT STUD FOR A DRAG BIT

Edward Vezirian, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 2, 1979, Ser. No. 35,371
Int. Cl.³ E21B *9/36*; E21C *13/01*
U.S. Cl. 175—329 **2 Claims**



1. A man-made diamond insert stud for a diamond drag bit, said drag bit having a multiplicity of said studs extending from the face of said bit, said stud comprising:

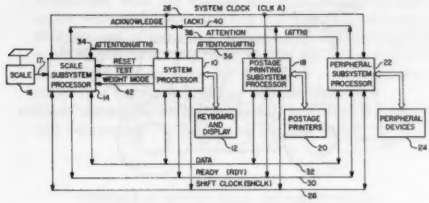
a substantially cylindrical solid insert stud body having a first cutter end and a second base end, and

a circumferential, radially extending shoulder substantially 90° to an axis of said stud is formed in said cylindrical body positioned between said first cutter end and said second base end of said body, said shoulder radially extends beyond any portion of said first cutter end and substantially encircles said cutter end, said shoulder, integral with said stud, serves to provide a contact and datum surface for insert stud alignment and insertion means so that said stud may be inserted in said face of said drag bit without damage to said first cutter end of said insert stud body, said stud body further including an axially aligned female slot formed in said cylindrical body in said radially extending circumferential shoulder between said shoulder and said second base end of said stud, said slot serves as an alignment guide for said stud insertion means.

4,325,440
METHOD AND SYSTEM FOR COMPUTING SPECIAL FEES IN A PARCEL POSTAGE METERING SYSTEM

Raymond R. Crowley, Newtown; Edward P. Daniels, Bridgeport, and Earl B. Holtz, Huntington, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,652
Int. Cl.³ G01G *23/22*
U.S. Cl. 177—25 **15 Claims**



1. A method for calculating a postage value for an article to be mailed, said method comprising the steps of:

(a) selecting postal information indicative of the carrier type, class and destination of an article to be mailed;

(b) obtaining weight information for said article;

(c) selecting special fee information indicative of at least one of a plurality of special fee categories for use with said article;

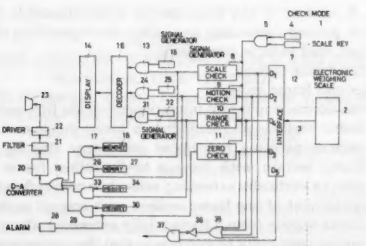
(d) determining whether two or more of said plurality of special fee categories are mutually exclusive in accordance with a predetermined schedule of charges; and

(e) generating a postage value for said article from said postal information, said weight information and said special fee information.

4,325,441
ERROR ALARM SYSTEM IN A COMBINED ELECTRONIC WEIGHING SCALE AND ELECTRONIC CASH REGISTER

Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 6, 1980, Ser. No. 147,271
Claims priority, application Japan, May 7, 1979, 54-56125
Int. Cl.³ G01G *23/22, 23/18, 23/00*
U.S. Cl. 177—25 **13 Claims**



1. A combined electronic cash register and weighing scale comprising:

an electronic cash register;

an electronic weighing scale for developing weight information data for the electronic cash register, said electronic cash register including,

an interface circuit for receiving said weight information data from said electronic weighing scale and developing an output signal in response thereto;

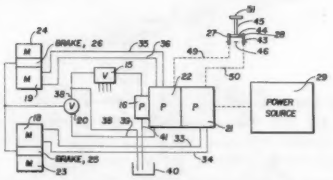
detection system means responsive to the output signal from said interface circuit for detecting an abnormal condition occurring within said electronic weighing scale and developing a detection output in response thereto; and

an announce system responsive to said detection output for audibly announcing the abnormal condition of said electronic weighing scale in response thereto.

4,325,442
FORK LIFT

Robert E. Groenig, 201 S. 88th Ave., Yakima, Wash. 98902

Filed Dec. 31, 1979, Ser. No. 108,655
Int. Cl.³ B62D *11/04*
U.S. Cl. 180—6.48 **4 Claims**



1. A fork lift (**10**) comprising,

a body,

a first wheel (**12**) and a second wheel (**13**),

a third caster wheel (**14**),

said first wheel and said second wheel being independent of each other,

a fork (**15**) on said body extending forwardly therefrom,

a first hydraulic motor (**18**), a first torque hub (**23**) adapted to connect said first motor to said first wheel (**12**),

a first hydraulic pump means (**16**) connected to said fork (**15**) for moving said fork up and down,

a second hydraulic motor (**19**), a second torque hub (**24**) adapted to connect said second motor (**19**) to said second wheel (**13**),

a third hydraulic motor connected to said fork (**15**),

a first actuating means (**49**) connecting said first pump (**21**) to connect said first motor to said first wheel,

a second actuating means connecting said second pump (**22**) to said second motor (**19**),

said first actuating means comprising (a) first control means **27,49** connected to said first pump (**21**),

said first control means **28,50** connected to said first pump **21**, said first control means comprising a second sector of a ring gear swingably connected at its center to said body, and connected to said first valve, said second actuator means comprising,

a first sector of a ring gear (**27**) swingably connected at its center to said body,

a second sector of a ring gear (**28**) swingably connected at its center to said body in co-axial relation to said first sector of a ring gear and connected to said first valve,

first teeth on said first sector of a ring gear extending towards said second sector of a ring gear,

second teeth on said second sector of a ring gear extending towards said first sector of a ring gear and a handle swingably connected to the axis of rotation of said first and second sectors of ring gears,

said handle being swingably connected to said body on an axis co-axial to said centers of said first and second sectors of ring gears and a sprocket on said handle,

said sprocket having teeth engaging said first and second ring gear teeth,

said handle being adapted to rotate said sprocket, whereby said first and second sectors of ring gears are rotated

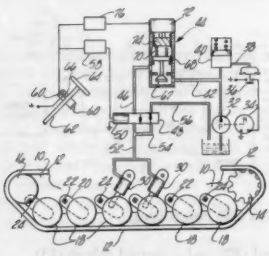
relative to each other and said first valve and said second valve are moved in opposite directions from each other, said handle being adapted to swing said first and second sectors of ring gears together thereby driving said first motor and said second motor selectively both in a first direction or in a second direction or driving said first and said second motors in opposite directions to each other for steering said fork lift.

4,325,443

TURNING ASSISTANCE FOR TRACKED VEHICLES

Frederick C. Fischer, deceased, late of Rochester, Mich., and by Carole M. Fischer, heir, 72 Wimberly Dr., Rochester, Mich. 48063

Filed Jun. 4, 1979, Ser. No. 45,023
Int. Cl.³ B62D *11/02, 55/16*
U.S. Cl. 180—6.54 **2 Claims**



1. In a tracked vehicle having two sets of roadwheels located alongside the vehicle hull; a ground-engaged track trained beneath each set of roadwheels; propulsion means for delivering mechanical power to each track; and a manual steering controller for selectively reducing or increasing the power to each track, to thereby cause the vehicle to turn in the direction of the track that receives the reduced power; each roadwheel being carried on a roadarm that is swingably attached to the hull; each roadarm having resilient force means associated therewith for applying a hull-suspension force to the respective roadwheel: the improvement comprising means responsive to manual operation of the steering controller for temporarily increasing the suspension force that is applied to at least one of the centermost roadwheels in each set of wheels while the vehicle is undergoing a turning maneuver, whereby the other roadwheels are caused to bear lesser hull-suspension forces than would be the case during straight-ahead movement of the vehicle; said force-increasing means comprising a hydraulic cylinder means (**30**) attached between the hull and one of the centermost roadwheels in each set of wheels, a source of pressurized hydraulic fluid, a valve (**50**) operable in response to controller movement for communicating the pressurized source with each hydraulic cylinder means, a pressure-regulating valve means (**44**) interposed between the source of pressurized fluid and the hydraulic cylinder means, and means (**72**) responsive to movement of the steering controller for adjusting the pressure setting of the regulating valve means inversely in accordance with the vehicle turning radius.

4,325,444

PROTECTOR FOR A DIFFERENTIAL GEAR CASING OF A VEHICLE

Yuichi Anami, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

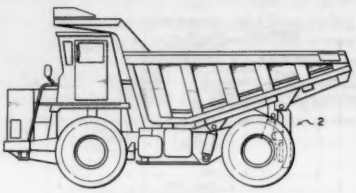
Filed Jun. 24, 1980, Ser. No. 162,439
Int. Cl.³ B60K *17/00*
U.S. Cl. 180—70 R **2 Claims**

1. A protector for a differential gear casing of a vehicle, comprising:

a frame of the vehicle;

a pair of suspension cylinder means for suspending said differential gear casing, one end of each of said suspension cylinder means being pivotally mounted to said frame and the other end of which is coupled to said differential gear casing;

protector means pivotally mounted at its upper end to said frame, said protector means being pivotable about a horizontal axis at right angles with the advancing direction of the vehicle;



first cushion means mounted on said protector means; and

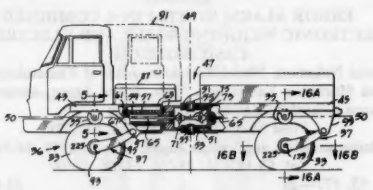
spring means provided between the lower end of said protector means and said differential gear casing for biasing said protector means toward said differential gear casing and thereby contacting said first cushion means with said differential gear casing.

4,325,445

OFF ROAD VEHICLES

William H. Albee, 1524 Spring Brook Rd., Walnut Creek, Calif. 94596

Division of Ser. No. 866,773, Jan. 3, 1978, abandoned. This application Oct. 7, 1980, Ser. No. 194,806
Int. Cl.³ B60K *23/00*
U.S. Cl. 180—74 **9 Claims**



1. A vehicle of the kind having fluid-distensible flexible-walled, ground contacting bag rollers for supporting the vehicle load, said vehicle comprising

a first frame section,

a second frame section,

frame connecting means interconnecting the first and second frame sections and including a hinge mechanism which permits pivoting movement and frame steering of one frame section with respect to the other frame section about a vertically extending axis while preventing bending movement of one frame section with respect to the other frame section from a horizontally extending plane extending perpendicular to said axis so that the connecting means provides a strong back connection between the two frame steered sections and wherein the connecting means include a swivel mechanism which permits one frame section to swivel longitudinally with respect to the other frame section,

one or more flexible-walled, fluid-distensible ground-contacting bag rollers associated with each frame section, wherein each bag roller includes an axle and wherein each axle is mounted for rotation in axle trunnions which are

fixed in position with respect to the associated frame section,

a top roller engaged with the top surface of each bag roller, top roller mounting means mounting the top roller for rotation about an axis continuously parallel to the fixed axis of rotation of the associated bag roller and allowing relative vertical movement therebetween while maintaining the top roller centered longitudinally above the associated bag roller axle,

biasing means associated with each top roller mounting means and with the vehicle frame for engaging said top roller with said associated bag roller with a selected variable amount of force to thereby assure at least a minimum wraparound of the bag roller on the top roller and to limit the extent of oscillation of the upper surface of the bag roller in a vertical direction, and

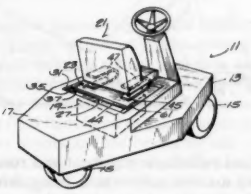
snubber means associated with each top roller for snubbing and dampening oscillations of the bag roller.

4,325,446

VEHICLE WITH ADJUSTABLE SEAT

John E. Hicks, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 4, 1980, Ser. No. 118,537
Int. Cl.³ B62D *23/00*
U.S. Cl. 180—89.17 **5 Claims**



1. A vehicle comprising a frame including a substantially closed engine compartment including an access opening, an engine supported on said frame in said compartment, a seat, and means for removably and adjustably supporting said seat in overlying relation to said engine comprising a pair of spaced elongated parallel guides on said frame and partially defining said access opening, a mounting platform connected to said seat, and means on said mounting platform and on said guides for supporting said platform so as to at least partially close said engine access opening, for guiding movement of said platform in the direction of elongation of said guides, and for removably and adjustably fixedly positioning said platform with respect to said guides.

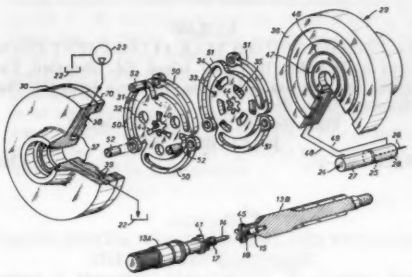
4,325,447

POWER-ASSISTED STEERING DEVICE AND THE MANUFACTURE THEREOF

Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Mar. 20, 1980, Ser. No. 132,159
Claims priority, application France, Mar. 26, 1979, 79 07530
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—132 **13 Claims**

1. A power-assisted steering device for a vehicle, comprising control means acting on steering means, said control means having a transmission element in two parts which are capable of limited relative angular displacement on either side of a neutral position under the action of said control means, said parts being connected to one another by elastic means disposed to return said parts to the neutral position, and assistor means responsive to an angular displacement of said parts, and operable to act on the steering means in the same sense as the control means, the said assistor means comprising a hydraulic power system, a hydraulic jack acting on the said steering means, and a hydraulic distributor interposed between the power system and the jack, the distributor comprising stator means which are fed by the hydraulic power system and which feed the hydraulic jack, and two rotors which are respectively integral in rotation with the two said parts and are provided with hydraulic passages, wherein said elastic means for returning said parts to the neutral position comprise at least one arm on one of the



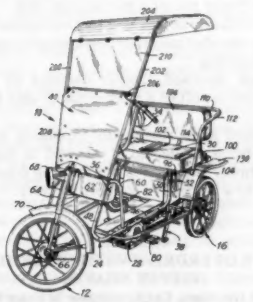
rotors coupled to the other rotor, the said arm and the said hydraulic passages in the rotors being such that the neutral position of elastic return of the arm coincides exactly with a hydraulic neutral position of the passages in the rotors, in which position the assistor means has no effect on the steering means.

4,325,448

THREE-WHEELED, MOTOR-POWERED, PEDAL-STARTED VEHICLE

Stuart Pivar, New York, N.Y., assignor to American Microcar Incorporated, Farmingdale, N.Y.

Continuation of Ser. No. 963,282, Nov. 24, 1978, Pat. No. 4,237,995. This application Mar. 25, 1980, Ser. No. 133,862
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ B60J *1/06*; B62D *61/08*; B62M *7/04*
U.S. Cl. 180—215 **19 Claims**



1. A vehicle comprising a frame, three wheels, disposed in triangular relationship on and supporting said frame, seating means on said frame, steering means on said frame and coupled to and adapted for steering at least one of said wheels, motor means on said frame for driving at least one of said wheels, and energy source means on said frame coupled to and enabling activation of said motor means, said seating means being of a breadth to support at least two passengers in side-by-side relation, a rotatable yoke mounted on said frame and straddling and coupled to the wheel which is adapted for being steered, said steering means being coupled to said yoke, said steering means including a steering tube which is adapted for yielding

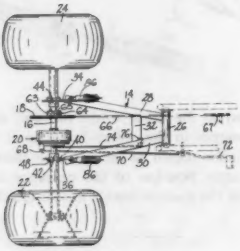
under pressure and is connected to said yoke, and handlebars on said steering tube, said steering tube including first, second and third serially interconnected sections, said first section being connected to said yoke to turn the same, said second section being generally horizontal, said third section extending upward at an angle from the second section and forming a junction therewith constituting a yieldable bend.

4,325,449

ALL-TERRAIN MOTORCYCLE ATTACHMENT DEVICE

Robert S. D'Addio, 19 Leetes Island Rd., Branford, Conn. 06405, and Douglas J. D'Addio, 119 Twin Lake Rd., North Branford, Conn. 06471

Filed Mar. 27, 1980, Ser. No. 134,294
Int. Cl.³ B62K *13/04*
U.S. Cl. 180—217 **29 Claims**



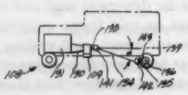
1. An all-terrain motorcycle attachment device comprising:
a swingarm frame having forward and rearward ends, said forward end being adapted for detachable connection to the swingarm pivot bolt assembly of a motorcycle,
said rearward end of said swingarm frame having a pair of spaced apart support members,
an axle rotatably mounted to said support members,
a pair of wheels mounted to said axle,
a drive sprocket connected to said axle,
means for braking said wheels, said braking means being connected to said axle and adapted for detachable connection to the brake rod of a motorcycle, and
means for detachably connecting said swingarm frame to the rear shock absorber means of a motorcycle, said swingarm frame comprising
a transversely disposed tubular member to receive the swingarm pivot bolt of a motorcycle at said forward end, and
a pair of spaced apart rearwardly extending support arms, said arms being connected at one end to said transverse tubular member and each said arm being connected at the other end to a respective support member.

4,325,450

AUTOMOTIVE OVERDRIVE WITH OFFSET INPUT AND OUTPUT SHAFTS

James E. Ward, Glendora, Calif., assignor to Dean Sweeney, Jr., San Marino, Calif., a part interest

Filed Mar. 5, 1980, Ser. No. 127,464
Int. Cl.³ B60K *17/22*
U.S. Cl. 180—247 **14 Claims**



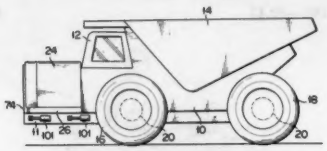
11. In a motor vehicle in which engine torque is transmitted from a drive shaft driven by an engine in the vehicle to a drive axle through a pair of single cardan universal joints operating at an angle to said drive shaft and drive axle, the cardan joints being associated respectively with the drive shaft and the drive axle, the improvement comprising an overdrive mechanism connectible to the drive shaft and comprising shiftable means coupled to the drive shaft for selectively transmitting engine torque, in either of two alternate effective gear ratios,
from the drive shaft to its associated cardan joint, the shiftable means being arranged to cause said associated cardan joint to be so located vertically relative to the other cardan joint to produce a reduction in said angle.

4,325,451

ELECTRIC POWER PLANT FOR VEHICLES

Haruhiko Umeda, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 35,982, May 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 865,250, Dec. 28, 1977, abandoned. This application Sep. 3, 1980, Ser. No. 183,764
Int. Cl.³ B60K *1/00, 5/10*
U.S. Cl. 180—294 **4 Claims**



1. In a wheel vehicle having front and rear wheels and a body mounted thereon, said vehicle being driven by electric motors and having a power plant enclosure mounted on a removable base, characterized in that said removable base is arranged wholly forwardly of the front wheels and transversely of the vehicle and is formed by a hollow shaped member comprising an upper plate, a lower plate, opposite vertical side plates supportingly connecting the upper and the lower plates, and vertical front and rear plates fixedly connecting the upper and the lower plates also, said removable base being mounted through at least two locking means on a pair of box-like frame units which are integrally secured to the bottom of a vehicle body and extend in parallel to each other along the longitudinal direction of the vehicle body, wherein each of the locking means comprises a pneumatic or hydraulic cylinder within which a piston is slidably accommodated, the cylinder being fixedly secured to a side plate member of each frame unit and the piston being always urged in one direction by a compression spring interposed between the piston and bottom of the cylinder, a piston rod fixedly connected at one end thereof to the piston on the opposite side of the compression spring, the other end of the piston rod extending through a pressure chamber of the cylinder and projecting out thereof, a rockable lever pivotally connected at one end thereof to the said other end of the piston rod and having a spline hole formed at a boss part of the other end of the rockable lever, a spline shaft vertically extending through the spline hole of the rockable lever from a lower plate member of the frame unit to which the lower end of the spline shaft is fixedly secured through a nut and projecting the upper end thereof through a substantially rectangular opening formed in the lower plate of the removable base, into a hollow space thereof, the projected upper end of the spline shaft having a head which is formed in a similar shape in cross section to the rectangular opening, but slightly smaller than the opening, wherein in order to lock the removable base on the frame units, the head of the spline shaft is engaged with an upper surface of the lower plate of the removable base when the spline shaft is rotated through the piston

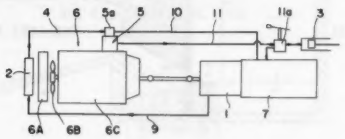
rod and the rockable lever by the resilient force of the compression spring, while in order to remove the removable base from the frame units the head is disengaged from the upper surface of the lower plate of the removable base when the spline shaft is rotated in the opposite direction by a pneumatic or hydraulic pressure counteracted to the resilient force of the compression spring.

4,325,452

WORK VEHICLE

Niro Bando, Sakai; Haruo Watanabe, Izumi, and Junji Miyata, Koaza-yakimachi, all of Japan, assignors to Kubota Ltd., Japan

Filed Feb. 29, 1980, Ser. No. 126,106
Claims priority, application Japan, Mar. 5, 1979, 54-25741
Int. Cl.³ B60K *25/00*
U.S. Cl. 180—306 **2 Claims**



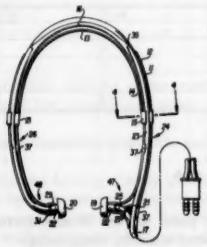
1. A work vehicle comprising a drive motor, a hydraulic stepless speed change apparatus, a transmission housing attached to said stepless speed change apparatus and containing therein a transmission apparatus, said stepless speed change apparatus utilizing lubricating fluid in said transmission housing as actuating fluid therefor, a radiator mounted on the vehicle, a conduit for supplying fluid heated by said stepless speed change apparatus to said radiator, a serially arranged conduit for supplying fluid cooled by said radiator to an inlet of a hydraulic pump driven by said motor, a conduit interposed between said inlet of said hydraulic pump and said transmission housing to return excess fluid to said transmission housing from said inlet or to supply deficient fluid to said inlet from said transmission housing, a conduit for supplying pressurized fluid from said pump to a control valve for a hydraulic working cylinder, and a conduit for returning fluid to said transmission housing from said pump or from said working cylinder via said control valve.

4,325,453

PNEUMATIC HEADSET

Robert A. Moussette, 9C, Chinachem Commercial Centre, 272 Chatham Rd., Kowloon, Hong Kong

Filed Jun. 11, 1980, Ser. No. 158,516
Int. Cl.³ A61B *7/02*
U.S. Cl. 181—135 **12 Claims**



1. A pneumatic headset comprising:

a generally C-shaped frame having an upper portion adapted to pass over a listener's head and leg portions extending from said upper portion, the leg portions supporting respective sound channelling ear pieces at free ends thereof;

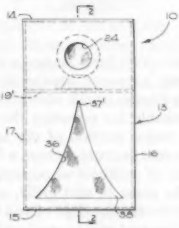
a pair of sound tubes entering and commonly supported to one of the free ends of said frame, a first of said sound tubes being acoustically connected at one end thereof with one of said sound channelling earpieces closest to said one free end of said frame and a second of said sound tubes being supported along said frame and acoustically connected at one end thereof with the other of said sound channeling earpieces, such that sounds in said first and second sound tubes respectively pass through said earpieces, said first and second sound tubes extending equally from said one free end of said frame outward of said frame to an acoustic plug, for coupling said sound tubes to a source of acoustic sounds, said first sound tube containing at least one porting hole for balancing the amplitudes of sounds emitted by said earpieces.

4,325,454

SPEAKER SYSTEM WHICH INVERTS AND REDIRECTS THE SPEAKER BACKWAVE

Theodore J. Humphrey, 3216-21st Ave. W., Seattle, Wash. 98199

Filed Sep. 29, 1980, Ser. No. 192,001
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—145 **4 Claims**



1. A speaker system, comprising:

a speaker housing which includes an air-impermeable first chamber and a second chamber, separated by a common wall;

a first speaker, which includes a diaphragm having a front surface and a rear surface, mounted about an opening in said first chamber and oriented such that the rear surface of the diaphragm faces the interior of said first chamber and the front surface of the diaphragm faces the atmosphere about said first chamber, so that in operation a first pressure wave produced off the front surface of the diaphragm propagates away from said first chamber in a first direction into the atmosphere, and a second pressure wave produced off the rear surface of the diaphragm propagates within said first chamber, tending to produce a varying pressure in said first chamber;

a second speaker, which also includes a diaphragm having a front surface and a rear surface, mounted about an opening in the common wall separating said first and second chambers and oriented such that the rear surface of the diaphragm faces the interior of said first chamber and the front surface of the diaphragm faces the interior of the second chamber, so that in operation, a third pressure wave produced off the front surface of the diaphragm of the second speaker propagates within said second chamber, said first and second speakers being oriented such that their respective axes of vibration are substantially perpendicular, said second speaker being driven in such a manner that the third pressure wave is a substantial replica of and is in phase with the second pressure wave, so that the pressure within said first chamber tends to remain constant; and

a slant board positioned in said second chamber beneath said second speaker, wherein in operation, the third pressure wave, upon striking the slant board, undergoes a phase reversal so that it propagates through an opening in said second chamber into the atmosphere, the first and third pressure waves thus propagating away from the speaker system with substantially the same phase.

4,325,455

LOUDSPEAKER GRILLE

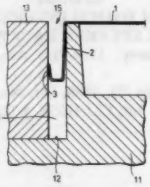
Maurice Kirkpatrick, High Wycombe, England, assignor to Tannoy Products Limited, High Wycombe and Lenver Products Limited, Brentwood, both of, England

Filed May 10, 1979, Ser. No. 37,847

Claims priority, application United Kingdom, May 12, 1978, 19294/78

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—148 **2 Claims**



1. A loud speaker grille for covering a speaker positioned in an enclosure having a groove, said grille being formed of a stiffened, resilient, fibrous, grille cloth material and having a central portion suitable for covering the speaker, said grille having at least a major portion of the length of its edge so shaped that, when seen in cross-section, a first part of said edge extends rearwardly of said central portion approximately perpendicularly to the plane of said grille, and a second part of said edge is affixed to the rear edge of said first part and returns forwardly again from said rear edge of said first part to lie at an acute angle with respect to said first part, said first and second parts forming a generally V-shaped configuration, said second part presenting a free edge lying to the rear of the plane of said grille by an amount sufficient to cause said free edge to reside in the groove when said grille is installed on the enclosure, said free edge being spaced from said first part by a distance greater than the width of the groove, said first and second parts being insertable in the groove so that said free edge is forced into engagement with the side of the groove by the resiliency of said material to retain said grille on the enclosure.

4,325,456

ACOUSTICAL TRANSFORMER FOR COMPRESSION-TYPE LOUDSPEAKER WITH AN ANNULAR DIAPHRAGM

Mark S. Ureda, Woodland Hills, Calif., assignor to Altec Corporation, Anaheim, Calif.

Filed Oct. 10, 1980, Ser. No. 196,074

Int. Cl.³ G10K *11/02*

U.S. Cl. 181—159 **6 Claims**

4. In a compression-type loudspeaker,

(a) an annular speaker diaphragm having inner and outer supporting rings,

(b) a horn having a substantially planar throat,

(c) a cylindrical member having an aperture formed through its center and having a conically dished portion surrounding said aperture, and

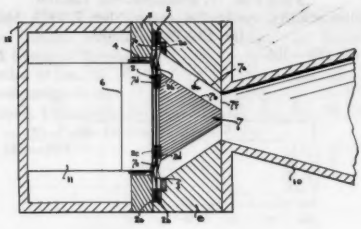
(d) an acoustical transformer for coupling the sound output of said diaphragm to the throat of the horn, said transformer comprising a transformer member having

(1) a substantially truncated conical surface,

(2) a first annular surface substantially conforming to the shape of said diaphragm and located at one end of the conical surface and positioned directly opposite the diaphragm,

(3) an exit surface opposite the first annular surface, said exit surface forming a truncation to the conical surface, and said exit surface being positioned directly opposite the horn throat and substantially in a plane parallel to that of the throat, the conical surface fitting snugly in the conically dished portion of the cylindrical member,

(4) a central core portion extending substantially between the first annular surface and the exit surface, said central core portion having sealing means lying inwardly of the first annular surface for forming an airtight seal with the inner supporting ring,



(5) a plurality of channels formed in said transformer member being spaced from each other around the conical surface of said member and extending through the member between the first annular surface and the exit surface thereof, said channels running from said core portion radially outwardly to the outer edges of said transformer member, sections of said transformer member being formed between said channels, the opposing wall surfaces of adjacent sections forming tapered sound channels running between said diaphragm and said horn throat and expanding in cross-sectional area from the first annular surface to the exit surface,

the sound waves generated by the diaphragm being transformed by the transformer to planar wave fronts for coupling to the horn throat.

4,325,457

ACOUSTICAL BARRIER

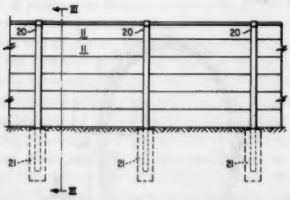
William G. Docherty, Windsor, and Alys J. Stegmaier, Dundas, both of Canada, assignors to Durisol Materials Limited, Mitchell, Canada

Filed Nov. 13, 1979, Ser. No. 93,420

Claims priority, application Canada, Jul. 19, 1979, 332118

Int. Cl.³ E04B *1/82;* **E04H** *17/00;* **C04B** *43/00*

U.S. Cl. 181—210 **4 Claims**



1. An acoustic panel for use as an external wall acoustical attenuator for sound sources, comprising:

a set of panels, each of said panels including a first layer and a second layer joined as two laminae, said first layer including mineralized fibrous material blended with cement and said second layer including a fine aggregate concrete, wherein a first reinforcing means is located within said

first layer, said first reinforcing means comprising reinforcing steel encased in mortar and extending throughout the length of the said panel;

support columns having means for supporting said panels and withstanding wind loads to which said panels are subjected and maintaining the acoustical panel airtight;

each of said panels being oriented with said first layer facing the source of the sound.

4,325,458

APPARATUS FOR REDUCING THE EXHAUST NOISE OF INTERNAL COMBUSTION ENGINES OR THE LIKE

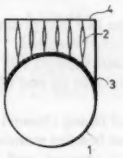
Oskar Bschorr, Munich, and Eckehard Laudien, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,088

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947256

Int. Cl.³ F01N *7/08, 1/02, 1/24*

U.S. Cl. 181—227 **15 Claims**



1. An apparatus for reducing the noise of an exhaust gas flow comprising exhaust pipe means, frame or housing means, a plurality of silator means tuned to different frequencies operatively held in rows in said frame or housing means, connecting means operatively securing said frame or housing means to said exhaust pipe means so as to transmit the noise of the exhaust gas flow to the silator means, and heat protection means operatively associated with said silator means for protecting said silator means from any hot exhaust gas, said silator means having a noise impedance selected relative to the noise impedance of the air of the surrounding environment.

4,325,459

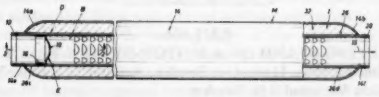
MUFFLER DIFFUSER

Mack M. Martin, 7212 Grand Blvd., Houston, Tex. 77054

Filed Sep. 29, 1980, Ser. No. 192,435

Int. Cl.³ F01N *1/10*

U.S. Cl. 181—248 **7 Claims**



1. A muffler diffuser adapted to be used with a muffler having an inlet end for receiving a noisy, gaseous exhaust comprising:

a diffuser element mountable within the muffler adjacent the inlet end;

said diffuser element having a body portion and a diffuser portion; said body portion being substantially of a tubular configuration and adapted to be longitudinally mounted and aligned with the longitudinal axis of the muffler;

said diffuser portion being of a substantially truncated conical configuration and adapted to be longitudinally aligned with the longitudinal axis of said body portion, with the greatest diameter of said diffuser portion adjacent the inlet end of the muffler and the smallest diameter of said diffuser portion extending downstream towards the exit end of the muffler;

said diffuser portion formed having a plurality of openings for directing the noisy, gaseous exhaust into the muffler;

a baffle body member mountable within the muffler, said baffle body member having a substantially tubular body member and adapted to be aligned with the longitudinal axis of the muffler;

said baffle body member having a plurality of louvers circumferentially disposed along the length of said baffle body member;

said louvers extending inwardly into the bore of said baffle body member towards the inlet end of the muffler so as to divert the noisy, gaseous exhaust to enhance noise diffusion; and,

said diffuser portion is mounted within said baffle body member in longitudinal alignment therewith.

4,325,460

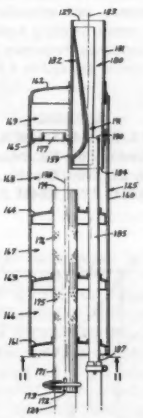
EJECTOR MUFFLER

Bruce B. Hoppenstedt, Richfield, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 14, 1980, Ser. No. 140,128

Int. Cl.³ F01N *1/14;* **B05B** *7/06;* **F15D** *1/02*

U.S. Cl. 181—259 **16 Claims**



1. A muffler-ejector assembly comprising, in combination:

a muffler having a casing elongated along a first axis between first and second ends, first and second end plates closing said ends, and an exhaust tube extending generally axially through said first end plate to open into said casing;

an ejector including a tubular housing extending along a second axis, offset from said first axis, through said second end plate to open into said casing and an ejector insert secured within said housing and configured for cooperation with a wall of said housing to define a venturi, having a throat offset from said second axis of the tubular housing;

and an air intake tube extending through said casing having an end at said throat of said venturi.

4,325,461

NOISE REDUCING RESONATORS, OR SO-CALLED SILATORS

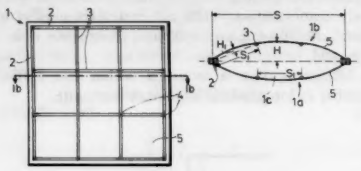
Oskar Bschorr, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,922

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947026

Int. Cl.³ G10K *11/16*

U.S. Cl. 181—286 **7 Claims**



1. A noise reducing apparatus, comprising resonance means including primary strut members (2) forming a main frame having a given span width, a number of secondary strut members (3) forming a plurality of subframes, junction means operatively interconnecting said main frame and said subframes, each of said subframes also having a respective span width, said main frame and said subframes forming vaults having a vaulting height corresponding to "x" times the corresponding span width, wherein x is within the range of 0.005 to 0.05, and vacuum tight cover means operatively supported by said main frame and by said subframes, said cover means enclosing a substantially evacuated inner volume, said primary strut members (2) forming with the cover means a main silator having a given resonance frequency, said secondary strut members (3) with the same cover means forming a plurality of subsilators each having its own resonance frequency, whereby the surface area of said cover means is utilized in a multiple manner.

4,325,462

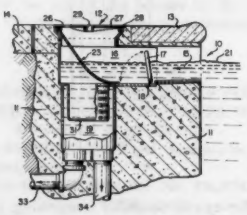
DEVICE FOR SMALL ANIMAL ESCAPE FROM A POOL

John Gouzos, 451 E. Boston Post Rd., Mamaroneck, N.Y. 10543

Filed Sep. 25, 1980, Ser. No. 190,516

Int. Cl.³ E06C *9/00*; E04H *3/20, 3/16*

U.S. Cl. 182—93 **2 Claims**



1. A pool escape device for small animals adapted to be used in pools having a pool walkway border substantially above the water level of the pool and a water chamber positioned below the walkway border which chamber is in communication with the surface of the pool comprising

(a) ladder means positioned in the water chamber between the water level of the pool and the walkway border, said ladder means having one end near enough to the surface of the pool for small animals to climb onto the ladder means and the ladder means having its other end near enough to the walkway border for small animals to climb from the ladder means to said border; and

(b) an aperture in the walkway border to permit animals climbing the ladder means to escape therethrough.

4,325,463

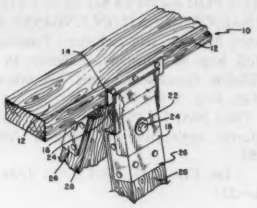
SAWHORSE

Frank E. Taylor, 1440 S. Seneca, Wichita, Kans. 67213

Filed Oct. 6, 1980, Ser. No. 194,586

Int. Cl.³ B27B *21/00*; F16M *11/00*

U.S. Cl. 182—155 **7 Claims**



1. A sawhorse or the like comprising:

(a) an elongated support member;

(b) a pair of elongated support rest bracket members, each secured in proximity to an end of said elongated support member;

(c) at least one pair of facing channel members bound to each of said support rest bracket members, each facing channel member having a channel and a structure defining a mounting bolt aperture;

(d) a mounting bolt secured within and between said mounting bolt aperture of each facing channel member;

(e) a pair of sawhorse, or the like, leg bracket members pivotally, slidably disposed to each of said mounting bolts and each securing an end of a sawhorse, or the like, leg;

(f) spring biasing means operatively mounted relative said mounting bolts and between each of said pair of leg bracket members and in the extended supporting/operating position biasing and holding said leg bracket members within the channel of the channel members;

(g) said sawhorse, or the like, being adapted for storage and/or transportation by actuating said spring biasing means by inwardly pivoting each pair of sawhorse, or the like, legs including the attached sawhorse, or the like, leg bracket members until clearing the channels of the channel members and generally aligning the legs in a general planar relationship, and subsequently rotating each pair of legs on each end of said elongated support member towards the underside of elongated support member for folding and lodging said legs thereunder.

4,325,464

LIFTING STAND OF A MOTOR-DRIVEN TRUCK

Nils-Olof Larsson, Halmstad, Sweden, assignor to Kalmar Last Maskin Verkstad AB, Sweden

Filed Dec. 7, 1979, Ser. No. 101,090

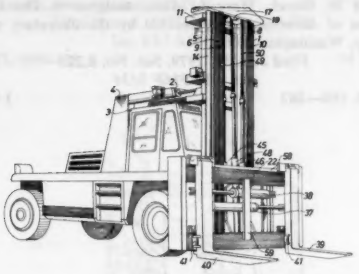
Claims priority, application Sweden, Mar. 9, 1979, 7907303

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 E **4 Claims**

1. A telescopically extensible lifting stand of a motor-driven truck comprising an outer frame attached to the truck and an inner frame displaceable between a lower retracted position and an upper projecting position, said inner frame carrying a lifting carriage provided with load-carrying means and displaceably journalled on the inner frame for movement along said frame, said lifting carriage being arranged to be moved along the inner frame by means of force-transmitting means while the inner frame remains immobile in relation to the outer frame, said force-transmitting means comprising an outer pair of hydraulic cylinders attached at one end to the lifting car-

riage and an inner pair of hydraulic cylinders attached at one end to lower portions of the inner frame, said inner and outer



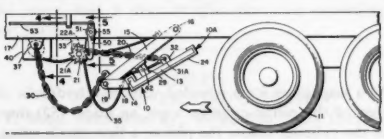
hydraulic cylinders being operatively joined in pairs at their outer ends by chains extending over pulleys journalled at upper portions of the inner frame.

4,325,465

AUXILIARY BRAKE FOR TRACTOR-TRAILER RIG

Ronald Lemon, 4739 Timon, Corpus Christi, Tex. 78402

Filed Apr. 25, 1980, Ser. No. 143,944
Int. Cl.[3] B60T 1/00
U.S. Cl. 188—4 R 7 Claims



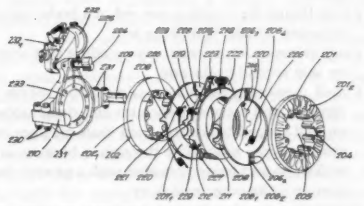
1. An auxiliary braking device for a wheeled vehicle having a frame, said braking device comprising a drag shoe to be disposed transversely across the vehicle and between a wheel on each side of the vehicle and a road surface, and means on each of opposite sides of the vehicle for supporting the drag shoe on said frame, said drag shoe comprising a rigid, substantially flat, metal plate member having leading and trailing edges disposed transversely across the vehicle and supported on the said frame, said plate member spanning the transverse rear wheel base of the vehicle, said plate member having a first surface facing the underlying road surface and a second surface facing said rear wheels when the braking device is in an operative position on the vehicle with the longitudinal axis of the plate member substantially perpendicular to the longitudinal axis of the vehicle, a flange integral with the plate member and upstanding from said second surface substantially parallel to and adjacent to the leading edge of the plate member, an easily removable elastomeric sheet covering said first surface folded about the said leading edge and over said flange, a first series of laterally spaced bolts securing the said sheet to said flange, said sheet being folded about the trailing edge of the plate member and overlapping a portion of said second surface, a second series of laterally spaced bolts securing said overlapping portion of the sheet to the plate member, that portion of the sheet between said series of bolts being substantially taut with the sheet disposed against but not bonded to the plate member whereby the sheet can be removed from the plate member upon removal of said bolts, said means for supporting said drag shoe on said frame in front of said rear wheels in a stored inoperable position and for guiding the drag shoe as a unit to the road surface in the paths of said rear wheels when actuated comprising on each side of the vehicle a first bar pivotably secured at one end to said frame and depending therefrom in front of a rear wheel, a second bar pivotably secured to the first bar and fixed to said leading edge of said drag shoe, a cable for lifting said drag shoe from the road surface to an inoperable folded stored position, means comprising a winch supported on said frame for shortening said cable to lift said drag shoe, means for supporting said drag shoe in its inoperable position comprising a quick release device and chain fixed to the drag shoe and to the quick release device for holding the drag shoe on the frame above the road surface, means for releasing said quick release device to release the chain and the first and second bars to permit the said support means and the drag shoe to unfold and drop the drag shoe to the road surface in the paths of rear wheels, a post-like stop member upstanding from said second surface, and a resilient pad fixed to said first bar and associated with said stop member on said plate member to prevent the first and second bars from folding so tightly they fail to unfold when the said chain is released.

4,325,466

DISK BRAKES

Hermann Klaue, Tour d'Ivoire 24 e, 1820 Montreux, Switzerland

Continuation of Ser. No. 616,191, Sep. 24, 1975, abandoned, which is a division of Ser. No. 470,303, May 15, 1974, Pat. No. 3,952,842, which is a continuation-in-part of Ser. No. 288,287, Sep. 12, 1972, Pat. No. 3,885,650, which is a continuation-in-part of Ser. No. 73,566, Sep. 18, 1970, abandoned. This application is also a continuation-in-part of Ser. No. 415,681, Nov. 14, 1973, abandoned and Ser. No. 457,261, Apr. 2, 1974, Pat. No. 3,942,610
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1969, 19602869; Dec. 27, 1969, 19651708; Dec. 27, 1969, 19651719; Aug. 25, 1973, 23430048; Switzerland, Nov. 17, 1972, 16741
Int. Cl.[3] F16D 55/10, 55/12, 55/18
U.S. Cl. 188—71.4 10 Claims



1. A fully lined disk brake and a vehicle wheel assembly comprising

a brake housing comprising an annular member having an annular gap of channel-like cross-section open on its radially exterior side, the opposite inner sides of said channel-like gap providing annular braking surfaces, said brake housing being attached to be rotatable jointly with a wheel of an assembly to be braked;

at least one pair of segmental disk brake shoes disposed from the radially exterior side into the channel-like gap having friction faces facing the adjacent braking surfaces, means for actuating said brake shoes into contact with said braking surfaces and means for non-rotatably supporting each pair of brake shoes in the gap comprising a fixed support means which carries members disposed over the gap and movable from over said gap to uncover a portion of the gap whereby the brake shoes are insertable into the gap without dismantling the brake shoe moving means, said actuating means comprising an annular housing which is rectangular in cross-section and has an open side facing a first brake shoe, a wall facing the second brake shoe, a wall adjacent to the radially inward side of the channel and a wall adjacent the open radially outward side of the channel, a ring piston in the space between the said walls, a heat insulating ring between the housing and each brake

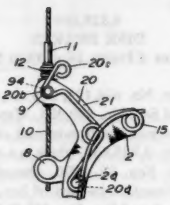
shoe, and a circumferentially spaced resilient means for maintaining the piston and cylinder together.

4,325,467

BICYCLE WHICH FACILITATES WHEEL REMOVAL

Masayoshi Kine, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 7,706, Jan. 30, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,472
Claims priority, application Japan, Feb. 27, 1978, 53-25551
Int. Cl.³ B62L 1/12
U.S. Cl. 188—24.12 5 Claims



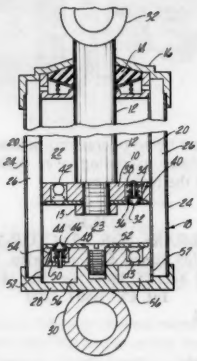
1. A caliper brake comprising:
a pair of first and second brake arms;
a pivot shaft for oscillably supporting said brake arms;
a pair of brake shoes respectively supported by said brake arms, said brake shoes having their braking faces disposed facing one another;
a return spring biasing the braking faces of said brake shoes apart;
a wire fixture for securing one end of a brake operating wire mounted on said first brake arm;
a suport means for an outer pipe guiding said wire mounted on said second brake arm;
a shaft member provided on said support means extending through said second brake arm and detachably mounted on said second brake arm, said shaft member including a shaft portion projecting through a bore in said second brake arm and being provided with a groove on at least a portion of its outer periphery;
a retaining member having a pivotal portion and a bent engaging portion, said retaining member being provided on the brake arm through which said shaft member extends, said pivotal portion and bent engaging portion being disposed in the same plane and in series, said retaining member being pivotally supported by said pivotal portion on said caliper brake and the bent engaging portion of the retaining member being elastically engaged into the groove of said shaft member to prevent said shaft member from being drawn out from said bore, said retaining member comprising an elastic wire curved at its one longitudinal end into a circular shape to provide said pivotal portion and curved at its other longitudinal end into a semicircular shape to provide said bent engaging portion, said bent engaging portion extending at its free end to form a manually manipulatable operation portion, and a connecting portion connecting said pivotal portion and bent engaging portion, said connecting portion having a bend therein such that said bent connecting portion biases the bent engaging portion radially toward and into engagement with said shaft member, said manually manipulatable portion allowing the gripping of said retaining member to bend said retaining member against the biasing of said engaging portion toward said shaft to allow said shaft to be removed from said second brake arm bore.

4,325,468

SUSPENSION CONTROL VALVE USING CONED SPRING DISKS

Richard W. Siorek, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 31, 1979, Ser. No. 8,225
Int. Cl.³ F16F 9/34
U.S. Cl. 188—282 1 Claim



1. In a suspension for a wheeled vehicle, a hydraulic shock absorber of the piston-cylinder type; an insert (52) disposed within the cylinder below the piston; a first check valve (42) carried by the piston permitting substantially unrestriced downflow from the space above the piston to the space immediately below the piston; a second check valve (43) carried by the insert permitting substantially unrestricted upflow to the space immediately below the piston; first metering means carried by the piston permitting controlled flow from the space below the piston to the space above the piston, comprising a first orifice means (36), a first cooperating tapered poppet metering valve, and spring mechanism biasing said poppet valve to a position closing the orifice means; second metering means carried by the insert permitting controlled flow from the space above the insert to the space below the insert, comprising a second orifice means (46), a second cooperating tapered poppet metering valve, and second spring mechanism biasing the second poppet valve to a position closing the second orifice means; each spring mechanism comprising a coil spring (45) having a constant rate load-deflection curve, and a plurality of coned spring disks (47) having convexly humped load-deflection curves; the coil spring and coned spring disks being arranged in series with each other between the associated metering valve and the structure on which the valve is mounted; the coned spring disks being juxtaposed to one another so that the cones of adjacent disks face in opposite directions to enable said disks to undergo overcenter deflections to conditions bottomed against each other; the coned spring disks and constant rate coil spring being selected so that the coned disks are caused to undergo overcenter snap-type deflection before the constant rate coil spring has undergone appreciable deflection; the coned spring disks being dimensioned so that said disks bottom against each other before the associated valve reaches its fully opened condition, whereby the coil spring controls the movement rate of the valve between the point at which the coned disks bottom against each other and the point at which the valve is fully opened.

4,325,469

SOFT LUGGAGE CONSTRUCTION

Martin E. Gurian, Edgewater, N.J., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 5, 1979, Ser. No. 100,326
Int. Cl.[3] A45C 3/00
U.S. Cl. 190—53 24 Claims

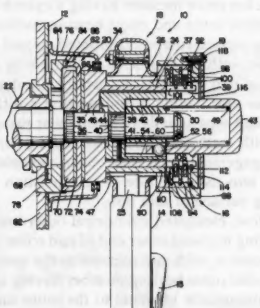
1. A piece of soft luggage having a plurality of highly abrasion resistant fabric walls defining an interior volume; means providing access to the interior volume; and handle means for facilitating carrying of the piece of luggage; and wherein the fabric forming the walls comprises a laminate including an outer layer, a lining layer, and a middle layer sandwiched between said outer and lining layers; and said outer layer comprising a raised effect weave having a raised yarn and a ground yarn, with highly abrasion resistant yarn providing the raised yarn, and the face thereof facing outwardly from the middle layer, and a distinct spun-like yarn providing the ground yarn.

4,325,470

HOIST OVERLOAD CLUTCH

Alan L. Bopp, Lexington, Ky., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 15, 1980, Ser. No. 121,932
Int. Cl.[3] F16D 13/30, 67/02
U.S. Cl. 192—16 5 Claims



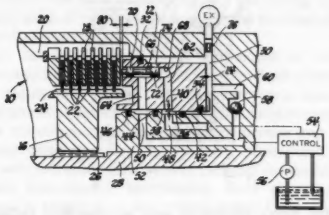
1. In a ratchet lever hoist comprisng a housing, a drive hub supported for rotation relative to said housing, an input hand lever mounted for rotation relative to said housing, a load supporting output member mounted for rotation within said housing, means connecting said drive hub and said output member, ratchet drive means operatively connecting said hand lever and said drive hub, and a handwheel operatively connected to said drive hub; the improvement including an input hub member comprising a tube received over a portion of said drive hub and including teeth formed on the outer diameter thereof for engagement by said ratchet drive means; and a clutch assembly received within said handwheel, said clutch assembly comprising a plurality of first clutch disks mounted for rotation with said handwheel, a plurality of second clutch disks mounted for rotation with said drive hub, and a plurality of friction disks interleaved between said first and second clutch disks; said handwheel comprises a cylindrical housing member having a stepped bore comprising a first relatively small diameter and a second relatively large diameter, and internal teeth formed in said first diameter and in engagement with the teeth formed on said tube.

4,325,471

PISTON POSITION CONTROL MECHANISM

David A. Schuster, New Boston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 186,860
Int. Cl.[3] F16D 25/12
U.S. Cl. 192—85 AA 4 Claims



1. An apply piston position control mechanism for a fluid operated piston which is operable in response to fluid pressure in an apply chamber to enforce engagement of a friction device such as a clutch or brake; said control mechanism comprising: a source of fluid pressure; passage means selectively connectable with said source for pressurizing the apply chamber to move said piston when engagement is desired; valve means slidably disposed in said piston and being in fluid communication with said source and said passage means; positioning means on said friction device for selectively abutting said valve means; and pressure responsive differential area means in fluid communication with said source for causing relative movement between said valve means and said piston when said piston is spaced a distance from the engagement position other than a predetermined distance when the friction device is disengaged, said valve means being operable to communicate said source with the apply chamber for moving said piston toward the engagement position until the valve means abuts said positioning means and said piston is spaced the predetermined distance.

4,325,472

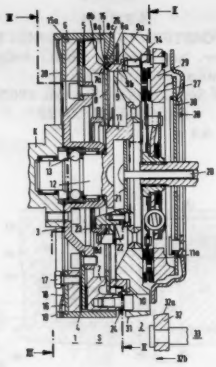
FLYWHEEL CONNECTED TO AN INTERNAL-COMBUSTION ENGINE

Klaus Steeg, Bühl, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 46,057
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824718
Int. Cl.[3] F16D 13/44, 21/08
U.S. Cl. 192—48.1 24 Claims

1. The combination, comprising a flywheel couplable to and uncouplable from an internal combustion engine, depending upon specific circumstances, and a clutch for coupling the flywheel to and for uncoupling the flywheel from the internal combustion engine, said clutch comprising an entrainer disc secured to a rotatable part of the internal combustion engine against axial and rotary displacement relative thereto, said entrainer disc having two friction surfaces, a pair of pressure plates each having a respective opposing friction surface located on opposite sides of said entrainer disc, a cup spring

actuatable for positively moving said pressure plates in opposite directions, said cup spring having a radially outer region operatively engageable with one of said pressure plates, and a radially farther inner region operatively engageable with the other of said pressure plates, an axially fixed tilting support of ring-shaped construction being disposed on an axially fixed part of the flywheel, said cup spring having a radial region disposed intermediate said radially outer and inner regions



thereof and being tiltable at said intermediate radial region thereof about said axially fixed support, said flywheel part being mounted for relative rotation with the rotatable part of the internal-combustion engine, torque transmission means for transmitting torque between said flywheel part, on the one hand, and the pair of axially movable pressure plates of the clutch, and actuating means engaging said cup spring at radially inner regions thereof.

4,325,473

BEARING ASSEMBLIES FOR USE IN CONVEYOR ROLLER

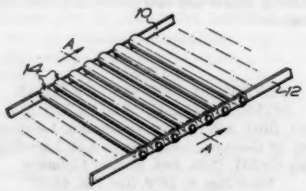
David M. Garnett, Thorpe Arch Trading Estate, Wetherby, Yorkshire, England (LS23 7BL)

Filed Dec. 26, 1979, Ser. No. 107,201

Claims priority, application United Kingdom, Sep. 8, 1979, 31238/79

Int. Cl.³ B65G *13/00*

U.S. Cl. 193—35 R **5 Claims**



1. A bearing assembly for a conveyor roller comprising a rolling bearing having an inner race and an outer race of which one is adapted to be in operative connection with a sleeve body, whilst the other is in operative connection with a spindle means in the form of a stub shaft which projects from the bearing for engagement in a supporting panel member but is prevented from moving out of the bearing in the direction in which it projects from the bearing by means of a shoulder and stop arrangement, and a blanking panel which rotates with the race which receives the sleeve body to blank off the roller elements from the interior of the sleeve body to prevent inflow of water into said sleeve body, the said spindle being spring loaded in the direction in which it projects from the bearing which is away from the blanking panel but is deflectible towards the blanking panel against spring action.

4,325,474

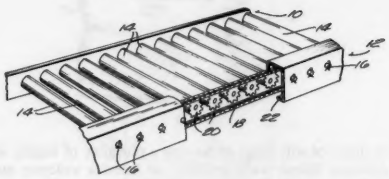
SLIP FRICTION ROLLER DRIVE

George Rae, Port Hope, Canada, assignor to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 912,676. This application Jan. 7, 1980, Ser. No. 110,073

Int. Cl.³ B65G *13/071*

U.S. Cl. 198—781 **2 Claims**



1. A roller conveyor apparatus comprising:

(a) a plurality of hollow, cylindrical rollers mounted for rotary movement about stationary axles fixedly secured to spaced, side-support frames, each of said rollers having a rotary bearing assembly at one end thereof;

(b) a chain driving means for rotating said plurality of rollers; and

(c) a slip friction assembly having associated with each said stationary axle at the other end of its respective said roller:

i. a hollow, elongated inner bearing member surrounding and secured to said stationary axle within said other end of said roller by means preventing rotational movement about, but permitting sliding movement along said axle by said inner bearing, said inner bearing member having a cylindrical outer surface and an annular radial flange outside said roller,

ii. a sprocket drive member having a cylindrical hub with cylindrical inner and outer bearing surfaces, said inner bearing surface rotatably mounted on said inner bearing member with its outside in juxtaposition to said radial flange of said inner bearing member, said sprocket drive member also having a disc portion positioned outside said roller substantially perpendicular to said cylindrical hub with teeth formed on the outer periphery thereof for engagement with said chain and with an annular recess into its inner side in juxtaposition to said outer bearing surface of said hub,

iii. a hollow, elongated cylindrical outer bearing member extending into said other end of said roller in continuous juxtaposition with and secured to the inner side of said roller, said outer bearing member having an inner diameter substantially identical to the outer diameter of the outer bearing surface of said hub and slip frictionally engageable thereon, said outer bearing member having an annular radial flange at its outer end positioned so that its outside is in juxtaposition with the bottom of said annular recess in said sprocket disc portion and slip frictionally engageable thereon and its inside is in juxtaposition with the mouth of said other end of said roller, so that said engagement of said sprocket teeth with said chain is coplanar with the interface of said sprocket disc portion and said flange portion of said outer bearing member, and

iv. adjustable means mounted on said axle on the outside of said radial flange of said inner bearing member for selectively moving said inner bearing member flange relative to said sprocket to cause greater or lesser fric-

tional forces to occur between said sprocket, said outer bearing member flange and said mouth of said roller,

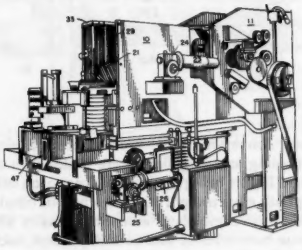
(d) whereby the frictional forces between each said sprocket and roller indepedent of an external force on said roller can be individually adjusted.

4,325,475

METHOD AND APPARATUS FOR STACKING

Michael H. Spalding, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed May 21, 1980, Ser. No. 152,044
Int. Cl.³ B65G 57/09
U.S. Cl. 198—429 **20 Claims**



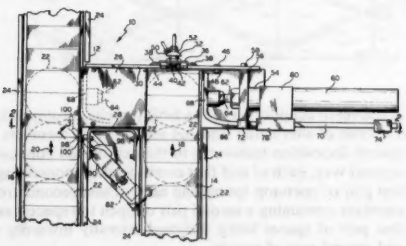
1. In a method of providing stacks of predetermined count product, the steps of providing a closed loop accumulator, serially introducing product at a first point in said loop while periodically removing a product stack adjacent a second point to provide a product-advancing loop portion with said loop portion expanding due to product introduction and the remaining loop portion contracting, periodically contracting the advancing loop portion and immediately thereafter removing said product stack, said advancing loop portion being arranged to expand during stack removal due to further product introduction.

4,325,476

APPARATUS FOR MERGING ARTICLES FROM TWO CONVEYOR LINES INTO ONE CONVEYOR LINE

William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 7, 1980, Ser. No. 119,268
Int. Cl.³ B65G 47/04
U.S. Cl. 198—448 **9 Claims**



1. Apparatus for automatically merging articles being conveyed by first and second conveyor lines for conveyance by a single conveyor line, comprising:

article position sensing means disposed adjacent a first position on the first conveyor line and connected in fluid flow communication by first conduit means to a source of pressurized fluid for sensing the presence of an article in said first position and providing a pressurized fluid output signal responsive to the thus sensed presence;

first pressure regulator means interposed in said first conduit means for regulating the pressure of the pressurized fluid between said first pressure regulator means and said article position sensing means to a predetermined value;

article transfer fluid power cylinder means disposed adjacent said first position for extending to thereby transfer an article from said first position to a second position on the second conveyor line, and, alternately, for retracting to permit another article to be conveyed to said first position along the first conveyor line;

article conveyance interrupting fluid power cylinder means disposed adjacent said second position on the second conveyor line for extending to thereby interrupt conveyance of articles past the extended article conveyance interrupting fluid power cylinder means along the second conveyor line, and, alternately, for retracting to permit conveyance of articles past said second position along the second conveyor line;

cylinder actuating valve means connected in fluid flow communication to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means and further connected in fluid flow communication to a source of pressurized fluid by second conduit means for applying pressurized fluid to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means in response to the output signal from said article position sensing means to extend said article transfer fluid power cylinder means and said article conveyance interrupting fluid power cylinder means;

cylinder position sensing means connected to a source of pressurized fluid for sensing the full extension of said article transfer fluid power cylinder means and providing a pressurized fluid output signal responsive to the full extension of said article transfer fluid power cylinder means; and

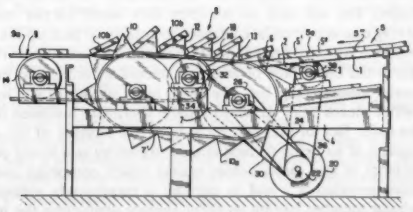
said cylinder actuating valve means being further adapted for applying pressurized fluid to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means in response to the output signal from said cylinder position sensing means to retract said article transfer fluid power cylinder means and said article conveyance interrupting fluid power cylinder means.

4,325,477

APPARATUS FOR THE FEEDING OF INDIVIDUAL PIECES OF TIMBER FROM A MAT OF A PLURALITY OF TIMBER PIECES

Lennart O. Heikinheimo, Helsinki, Finland, assignor to Plan-Sell Oy, Finland

Filed Dec. 28, 1977, Ser. No. 865,201
Claims priority, application Finland, Jan. 13, 1977, 770095
Int. Cl.³ B65G 47/31
U.S. Cl. 198—461 **5 Claims**



1. An apparatus for feeding individual pieces of timber from a mat of a plurality of interconnected or closely adjacent tim-

ber pieces, comprising feed conveyor means for feeding the timber to a feed path, cam means engageable with the foremost edge of the foremost one of the timber pieces to arrest the mat temporarily in the feed path, a second conveyor for individual timber pieces spaced from said feed conveyor, and a transfer conveyor disposed between said feed conveyor and said second conveyor and including an endless member having a plurality of projection members thereon, each including a projection portion engageable in succession with the foremost one of the timber pieces adjacent the trailing edge thereof to facilitate the separation of the foremost piece from the mat, said projection members each having an inclined supporting surface extending forwardly from said projection portion in the direction of movement of said transfer conveyor and engageable beneath one respective foremost piece to support it in a position inclined downwardly in the direction of movement of said transfer conveyor, and drive means connected to said second conveyor, said transfer conveyor and said cam means, to move said second conveyor in a direction away from said transfer conveyor and to move said transfer conveyor in a direction away from said feed conveyor to said second conveyor and to actuate said cam means to move said cam means out of the way of the foremost piece of timber as it is picked up by said projection member and to move it back again to arrest the mat until the next projection member is moved into position to engage the foremost piece.

4,325,478

TRANSPORT BELT INTENDED FOR TRANSPORTING PRODUCTS AT A HIGH TEMPERATURE, AND A TRANSPORT MEANS EQUIPPED WITH THIS BELT

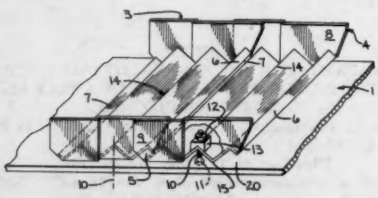
Gerard Y. Richard, Precy sur Oise, France, assignor to Societe d'Applications de Procedes Industriels et Chimiques, France

Continuation of Ser. No. 827,844. This application Oct. 12, 1979, Ser. No. 84,076

Claims priority, application France, Sep. 2, 1976, 76 26441; Nov. 25, 1976, 76 35474

Int. Cl.[3] B65G *15/44*

U.S. Cl. 198—699 **2 Claims**



1. A transport belt for a conveyor useful for the transport of products whose temperature exceeds 200° C. comprising a flexible flat belt and on its outer face metal carrier means having one upper surface adapted to receive or pick up the hot products which are to be transported and a lower outer surface facing the outer face of said belt, means securing said metal carrier means to said belt, the lower outer surface of said metal carrier means being at least partially thermally insulated from the outer face of said belt by at least one cushion of air, said cushion of air being formed at least in part by said lower outer surfaces of said metal carrier means which comprises one or more inverted V's and in part by a transversely extending tubular member having its outer surface contacting the inner surfaces of the inverted V, said tubular member being in line contact with the outer face of said belt and providing a plurality of line contacts with the outer surfaces of said inverted V's.

4,325,479

FEED CONVEYOR

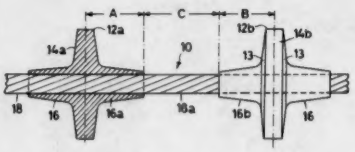
Camillo Pirovano, Via Spluga, Cernusco Lombardone, Como, and Umberto Vergani, Via Marconi, 199 - Merate, Como, both of Italy

Continuation of Ser. No. 756,435. This application Sep. 5, 1978, Ser. No. 939,214

Claims priority, application Italy, Nov. 9, 1976, 29172 A/76

Int. Cl.[3] B65G *19/08*

U.S. Cl. 198—733 **3 Claims**



1. In a feed conveyor of the type wherein a plurality of radially protruding scraping flights are molded on a flexible feed cable, said flights being equidistant from each other, each flight having both a central portion and a pair of tubular sleeve members, said sleeve members extending axially along said feed cable from both sides of said central portion, each of said tubular sleeve members having a support distance associated therewith equal to the length of that sleeve member plus one half the length of said central portion, said flights being spaced apart a distance sufficient to expose a length of cable between confronting tubular sleeve members on adjacent flights, the improvement comprising:

the sums of the support distances of each pair of confronting sleeve members being greater than the length of exposed cable therebetween, said length of exposed cable being greater than the length of either of said adjacent sleeve members.

4,325,480

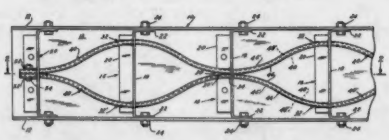
CONVEYOR SUPPORT WAY

William C. Butt, Lynchburg, Va., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jan. 13, 1977, Ser. No. 758,932

Int. Cl.[3] B65G *15/60, 17/00*

U.S. Cl. 198—841 **19 Claims**



1. A conveyor support way for a table top chain comprising:

(A) a series of alternating first and second cross members in spaced disposition transverse to the axis of said conveyor support way, each of said first cross members containing a first pair of open top spaces and each of said second cross members containing a second pair of open top spaces, said first pair of spaces being disposed laterally inwardly of said second pair of spaces;

(B) a pair of serpentine wear strips, each of said wear strips extending along the length of said series of cross members, alternately through an associated one of said first cross member spaces and through an associated one of said second cross member spaces, and being axially slidably and easily removably mounted on said series of cross members; each of said wear strips is of generally rectangular cross-section with a longitudinally extending groove

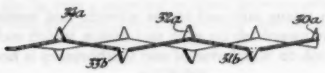
along each long side thereof to define an "I" cross-section, and each of said spaces of said first and second cross members having a minimum width greater than the maximum width of each said wear strip passing therethrough so that said wear strips sit loosely in said spaces, said wear strips being insertable into and removable from said cross member spaces without the use of tools by displacements of said wear strips relative to said cross members in a direction substantially perpendicular to the axis of said wear strips.

4,325,481

ANCHOR PLATE

Heinrich Kortye, 930 NE. 50th Ct., Pompano Beach, Fla. 33064

Filed Jan. 8, 1981, Ser. No. 223,344
Int. Cl.³ B65D *21/02*; B65G *1/14*
U.S. Cl. 206—503 **3 Claims**



1. A new and improved anchor plate for maintaining stacked containers in a stable relation, comprising:

a substantially rigid body for placement between adjacent containers;

said body having a plurality of patterns formed therein, said patterns providing a resilient hill and dale surface,

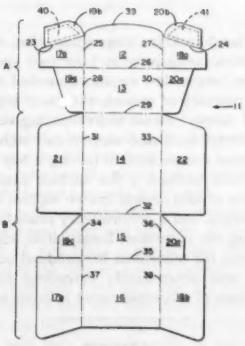
a plurality of rows of teeth on the upper portion of said hill surface for engaging said adjacent containers and a plurality of rows of teeth on the lower portion of said dale surface extending downward for engaging said adjacent container.

4,325,482

FLIP TOP, RECLOSABLE CARTON

Larry R. Feeser, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 20, 1980, Ser. No. 208,719
Int. Cl.³ B65D *5/54, 5/66*
U.S. Cl. 206—625 **3 Claims**



1. A flip top reclosable dispenser carton comprising:

(a) a front wall, back wall, top wall, bottom wall and a pair of opposing side walls;

(b) said front wall including a lower front wall hingedly connected to said bottom wall and an upper front wall tucked behind and held in place by said lower front wall, the upper end of said upper front wall being hingedly connected to said top wall;

(c) each of said side walls including an inner side wall, an outer side wall and an intermediate side wall;

(d) each of said inner side walls being hingedly connected to said back wall and approximately the same height as said back wall along said hinge line;

(e) each of said outer side walls including a lower closure flap hingedly connected to said lower front wall and an upper closure flap hingedly connected to said upper front wall;

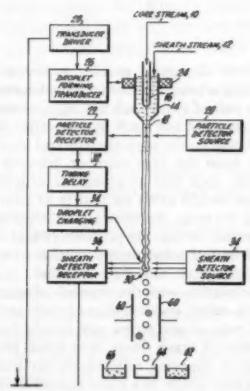
(f) each of said intermediate side walls including a top closure flap hingedly connected to said top wall and being adhesively attached to and having the same overall dimension and shape as said upper closure flap of said outer side wall, a lower closure flap hingedly connected to said bottom wall and being adhesively attached to said lower closure flap of said outer side wall, and a glue flap being connected to said upper closure flap of said outer side wall by a line of weakness and further being adhesively attached to said lower closure flap of said outer side wall such that said lines of weakness is in general alignment with the top edge of said lower closure flap of said outer side wall and the lower edge of said top closure flap of said intermediate side wall.

4,325,483

METHOD FOR DETECTING AND CONTROLLING FLOW RATES OF THE DROPLET FORMING STREAM OF AN ELECTROSTATIC PARTICLE SORTING APPARATUS

Igino Lombardo, Sharon; Donald E. Barry, Norwood, and W. Peter Hansen, Middleboro, all of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,231
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—3.1 **43 Claims**



1. An electrostatic particle sorting system, comprising:

(a) flow means for establishing the flow of a continuous particle containing stream comprising at least a particle containing core stream portion and a surrounding sheath stream portion, said stream having a particle sensing point defined therealong;

(b) optical detection means for optically detecting said particles at least at said particle sensing point;

(c) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a breakpoint at which said stream becomes a series of discrete droplets;

(d) droplet charging means for relatively charging selected ones of said droplets as they are formed at said breakpoint; and

(e) synchronization means for timing said relative charging

such that said selected droplets contain at least selected particles detected by said optical detection means; said synchronization means comprising:

(i) sheath sensing means for sensing at least the light scatter of said sheath stream portion at a sheath sensing point therealong subsequent to said perturbation and for producing a surface character output signal which is proportional thereto;

(ii) surface character analysis means for producing an output signal which is at least selectively responsive to said sheath sensing means;

(iii) flow rate adjustment means responsive to said surface character analysis means for establishing and maintaining a preselected flow rate of said stream.

4,325,484

HOLDER FOR ELONGATED ARTICLES

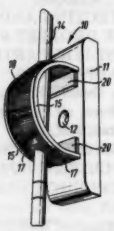
Richard M. Berry, Bristol, England, assignor to Kleeneze Limited, England

Filed Mar. 26, 1979, Ser. No. 24,026

Claims priority, application United Kingdom, Mar. 29, 1978, 12191/78

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—66 **8 Claims**



1. A holder for elongated articles as herein defined, said holder comprising a base member for attachment to a supporting structure, a pair of strips each having opposite ends attachable to a base member and each having other than a straight configuration between the ends thereof and also being shaped to project out from the base member between the opposite ends of the strip, such that an elongated article disposed between the strips would cross each strip at two spaced apart locations along the strip, the ends of the strips being attached to said base member so that the portions of said strips intermediate their ends extend substantially parallel to each other and project outwardly from said base member, said strips each being of channel section with the channels of said strips extending toward each other, and a resilient bristle strip mounted in the channel of each of said strips, said bristle strips each comprising a plurality of brush fibers, said brush fibers extending from said strips in opposing relationship for holding therebetween an elongated article in a plane spaced from but substantially parallel to that of said base member a resilient pad being attached to the base member between adjacent ends of the pair of strips.

4,325,485

TOOTHBRUSH HOLDER

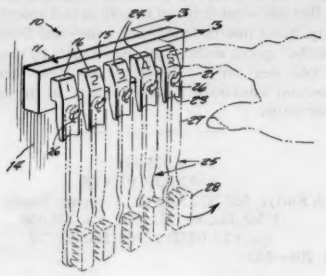
Octavio U. Pina, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Mar. 10, 1980, Ser. No. 128,569

Int. Cl.³ A46B *17/02*; A47G *29/08*

U.S. Cl. 211—66 **2 Claims**

1. A toothbrush holder for supporting a plurality of toothbrushes, comprising in combination a one-piece main body including a plurality of buttons integral therewith, means on each side button for supporting a toothbrush said buttons being in a horizontal row on a front side thereof, and a recess in said main body behind each said button, and a hinge about which



said button pivots into said recess wherein said means comprises a downward tab on each said button which includes a forward hook on which one of said toothbrushes is hooked.

4,325,486

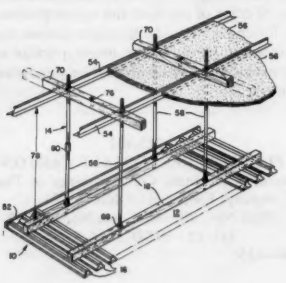
OVERHEAD GLASS STEMWARE RACK

Edwin S. Neal, 101 E. Boulevard, Charlotte, N.C. 28203

Filed Jan. 7, 1980, Ser. No. 110,219

Int. Cl.³ A47B *73/00*; A47F *7/28*; A47G *29/00*

U.S. Cl. 211—71 **12 Claims**



1. An overhead rack for suspending glass stemware in an inverted position comprising at least two spaced elongated support means, suspension means connected to said support means, and a plurality of spaced, elongated support rails connected to said support means and extending substantially perpendicular thereto, each said support rail including a bottom surface, a central crown section having a top surface spaced from said bottom surface, a flat surface extending laterally from either side of said central crown section below the level of said top surface, and a downwardly extending stepped section connecting the outermost longitudinal edge of each said flat surface with the outermost longitudinal edge of said bottom surface, said downwardly extending stepped sections being in the form of a reverse curve in cross section.

4,325,487

SEALING AND LOCKING THREAD SYSTEM

Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022

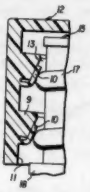
Filed Jun. 2, 1980, Ser. No. 155,406

Int. Cl.³ F65D *41/04*

U.S. Cl. 215—330 **3 Claims**

1. A self-locking thread system incorporated in male and female threadedly-engaged parts and to be locked-up in response to relative rotation of the parts, one of the said parts

being provided with a helical thread having a transverse cross-section of substantially trapezoidal configuration to present a camming working face, a helical fin positioned below said thread on said same part and having a width greater than the



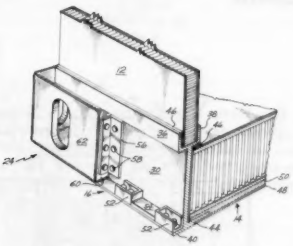
thread flight, the pitch of the fin and thread being the same, the other threaded part being so dimensioned and arranged so that relative rotation of the parts will cause the camming surface to deflect the fin into a jamming position between said threaded parts to bind the parts against inadvertent unscrewing thereof.

4,325,488

LIGHTWEIGHT CARGO CONTAINER AND FITTINGS

Clyde R. Ketner, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 23, 1979, Ser. No. 69,219
Int. Cl.[3] B65D *88/12, 90/08*
U.S. Cl. 220—1.5 **4 Claims**



1. A side rail fitting adapted to secure the walls to the floor in a lightweight cargo container comprising

a rigid upper portion having a substantially U-shaped cross section formed by a generally planar bight and two arms integral with the ends thereof, said arms having substantially smooth facing surfaces and extending substantially perpendicularly with respect to said bight, at least one of said arms being tapered from root to tip in a direction away from said bight such that the distance between said arms increases in said direction;

a rigid, lower, substantially planar base, extending generally parallel with respect to said bight; and

a web integral with and extending substantially perpendicularly between said bight and said base, at least a portion of the surface of said bight opposite that from which said arms extend being tapered away from said base in a direction away from said web, such that the distance between said bight surface and said base increases in said direction away from said web, the integral connection between said bight and said web being located on said bight surface substantially midway between the integral connections of said arms to said bight and the integral connection between said base and said web dividing said base into two base portions; wherein one of said base portions has a recess in the surface thereof opposite that to which the web connects forming one free end of reduced thickness;

a lightweight wall inserted in said upper portion, a lightweight floor inserted substantially between the tapered surface of said bight and one of said base portions, a first wedge inserted between said tapered arm and said wall, a second wedge inserted between the tapered surface of said bight and said floor, and adhesive means for securing said first and second wedges, said wall and said floor within said fitting; and

at least one pair of restraint blocks removably mounted in spaced relation on the other base portion and a rub strip removably mounted between said restraint blocks for providing a hold-down attachment for said container.

4. A protective corner fitting for a lightweight cargo container comprising

a fixed part, adapted to be permanently attached to the container; said fixed part comprising

first and second substantially rectangular walls integrally connected to each other along an edge of each and extending generally at right angles to each other from their connection; a third, substantially rectangular wall integrally connected along two of its edges to said first and second walls and extending generally at right angles to each of said first and second walls,

a removable part, adapted to be removably attached to said fixed part, said removable part comprising

fourth and fifth substantially rectangular walls integrally connected to each other along an edge of each and extending generally at right angles to each other from their connection; a sixth substantially rectangular wall integrally connected along two of its edges to said fourth and fifth walls and extending generally at right angles to each of said fourth and fifth walls; said fourth, fifth and sixth walls having means for handling provided therein; and

means for removably connecting said removable part to said fixed part such that when said parts are connected together, said third wall contacts the edges of said fourth and fifth walls opposite the edges to which said sixth wall is connected and said sixth wall contacts the edges of said first and second walls opposite the edges to which said third wall is connected to form a generally rectangular, hollow, protective corner, said means for connecting said parts comprising

a first flange fixed to each of the edges of said first and second walls opposite the connection therebetween, each first flange extending at substantially a right angle to the wall to which it is attached and each first flange carrying at least one fastening means;

a first fillet on the inside of the connection between said first and second walls, said first fillet having at least one bore therein;

a second flange connected to the inside of said third wall adjacent the corner thereof diagonally opposite said first fillet, said second flange having at least one bore therein;

a recess in the inside of said fourth and fifth walls at the edges thereof opposite the connection therebetween, each said recess being shaped and dimensioned to receive said first flanges and having at least one bore therethrough which is so located to align with the at least one fastening means on a respective one of said first flanges when said parts are connected;

a second fillet on the inside of the connection between said fourth and fifth walls, said second fillet having at least one first pin extending therefrom, said at least one first pin being oriented and dimensioned so as to be received in the at least one bore in said second flange when said parts are connected; and

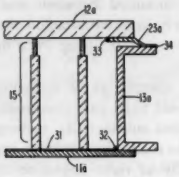
at least one second pin extending from the corner of said sixth wall diagonally opposite said second fillet; said at least one second pin being oriented and dimensioned to be received in said at least one bore in said first fillet when said parts are connected.

4,325,489

ENVELOPE FOR FLAT PANEL DISPLAY DEVICES

John P. Russell, Pennington, and Charles B. Carroll, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 17, 1980, Ser. No. 140,962
Int. Cl.³ H01K *1/36*; H01J *29/86*
U.S. Cl. 220—2.2 **12 Claims**



1. An envelope for a flat panel display device comprising:

a first envelope portion including a baseplate and a second envelope portion including a faceplate said baseplate and said faceplate being arranged in a spaced substantially parallel relationship;

a plurality of side walls included in at least one of said envelope portions and extending between said baseplate and said faceplate around the periphery of said envelope to maintain said substantially parallel relationship, said side walls having a first predetermined dimension;

a plurality of support walls extending between said baseplate and said faceplate to divide said envelope into a plurality of channels and to support said baseplate and said faceplate against atmospheric pressure, said support walls having a second predetermined dimension greater than said first predetermined dimension,

a flexible seal for hermetically and flexibly coupling said envelope portions, said seal including a first continuous member affixed to said first portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a first sealable edge surface, a second continuous member affixed to said second portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a first sealable edge surface, a second continuous member affixed to said second portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a second sealable edge surface, said edge surfaces meeting along a sealable seam to form a space between said continuous members, said space varying in accordance with any difference between said first and second predetermined dimensions as said seal flexes in response to atmospheric pressure compressing said support walls between said baseplate and said faceplate.

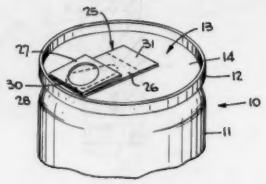
4,325,490

NON-DETACHABLE RING PULL OPENING DEVICE FOR BEVERAGE CANS

Roger N. Conrad, Matteson, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 16, 1980, Ser. No. 197,721
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **3 Claims**

1. An easy opening container assembly comprising a container panel, a line of weakness in said container panel defining a removable panel portion, said line of weakness having a starting portion; the improvement residing in said container panel being fractured along said line of weakness starting portion, said fractured starting portion including jagged edges on said container panel and said removable panel portion disposed in mechanical interlocked relation, an opening tab, said opening tab including a body portion overlying said removable panel portion and being releasably sealed to said container panel surrounding said line of weakness and permanently secured to said removable panel portion radially outwardly of said removable panel portion, said tab including a



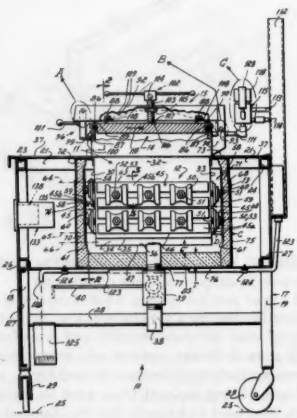
grip portion extending from said body portion adjacent said line of weakness starting portion, and said body portion having a terminal part permanently bonded to said container panel remote from said grip portion.

4,325,491

PRESSURE COOKER CLOSURE FASTENING MEANS

Donald R. Barnhill, Hamilton, Ohio, assignor to B&W Metals Company, Inc., Fairfield, Ohio

Division of Ser. No. 98,673. This application Sep. 22, 1980, Ser. No. 189,151
Int. Cl.³ B65D *45/00, 45/28*
U.S. Cl. 220—316 **3 Claims**



1. A cover assembly for a pressure cooker, said cooker including a tank defined by a series of walls and a floor, said cover assembly comprising

a cover adapted to be received in sealing relation with the top of said tank,

a hold-down bar connected to said cooker for movement between tank open and tank closed positions, said hold-down bar cooperating with said cover for restraining said cover in sealing relation with said tank when said hold-down bar is in the tank closed position, and said hold-down bar cooperating with said cover for moving said cover into and out of closure relation with said tank as said hold-down bar is moved between tank open and tank closed positions, and

connector means connecting said cover with said hold-down bar, said connector means comprising at least one bracket mounted on one of said cover and said hold-down bar, and at least one seat mounted on the other of said cover and

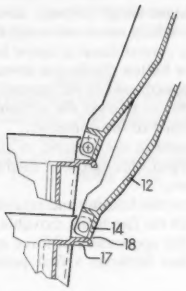
said hold-down bar, said bracket and seat cooperating to retain said cover and said hold-down bar in assembly during normal use when said hold-down bar is translated between the tank open and tank closed positions, and said bracket and seat also cooperating so that when said hold-down bar is in the tank open position said cover need merely be lifted off said seat without disconnecting any other structural elements when disassembly of said cover from said hold-down bar is desired.

4,325,492

COVERED CONTAINER

Walter A. Kunze, Coraopolis, Pa., assignor to Cities Service Company, Tulsa, Okla.

Filed May 22, 1980, Ser. No. 152,289
Int. Cl.³ B65D *43/24*
U.S. Cl. 220—335 **10 Claims**



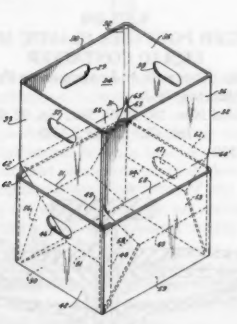
1. A receptacle device comprising a cover and a deeply drawn tapered container having an opening having a straight side wherein the cover is pivotally attached to the container at the opening in such a manner that the cover opens and closes the container and wherein the cover is clear of the opening when in the open position.

4,325,493

COLLAPSIBLE CARTON

Richard E. Paige, New York, N.Y., assignor to The Paige Company Containers, Inc., New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,655
Int. Cl.³ B65D *5/02, 5/36, 5/56*
U.S. Cl. 220—416 **4 Claims**



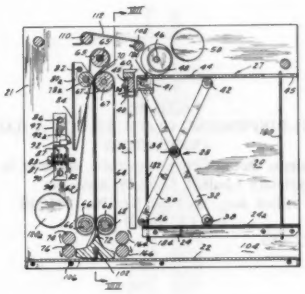
1. A carton comprising inner and outer snugly nestable tubular shells, each shell including a series of side wall panels hingedly connected together along their side edges, said shells being telescopically adjustable into and out of a set-up relationship in which the overlying side wall panels define a set of double-walled carton sides, a plurality of foldable strips hingedly interconnecting adjacent bottom edges of said overlying side wall panels, said strips being unfolded and parallel to their respective side wall panels when said inner shell is pulled out of said outer shell to its maximum extent and said strips being folded and extending transverse to said side wall panels when said shells are telescoped into the set-up relationship so as to define the carton floor, the lower ends of the side edges of adjacent side wall panels of the inner shell series of such panels being spaced apart when said inner shell is out of said outer shell to its maximum extent to create a gap between said side edges, the lower ends of the inner shell side wall panels being bent inwardly toward each other to close the gaps and reduce the cross-sectional dimensions of the inner shell as the inner shell is telescoped into the outer shell, and each hinge connection between the side wall panels of said inner shell being formed by a pair of parallel hinge lines, the gap between the inner shell side wall panels being between said pair of hinge lines and spaced laterally therefrom.

4,325,494

SINGLE-BILL CURRENCY DISPENSER

Leonard A. Fish, Chicago, Ill., assignor to Avco Investment Management Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 786,760. This application Jun. 19, 1979, Ser. No. 49,896
Int. Cl.³ B65H *5/06*
U.S. Cl. 221—13 **21 Claims**



1. A dispenser for dispensing sheets of currency one sheet at a time, comprising means for supporting a stack of currency sheets, a feed roller having eccentric means engaged with the topmost sheet in said stack, constant force pressure means for pressing said stack into contact with said feed roller, means for rotating said feed roller for urging said topmost sheet forwardly relative to said stack, means for sensing the advancement of said topmost sheet for de-energizing said feed roller in response to said advancement, and conveyor means for carrying said advanced topmost sheet to an exit port to dispense said sheet.

4,325,495

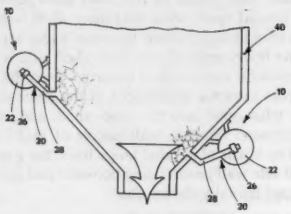
STORAGE BIN ACTIVATOR DEVICE AND METHOD FOR RESTORING BULK MATERIAL FREE FLOW

Michael M. Mokris, Lakewood, N.J., assignor to Pulsonics Corporation, Lakewood, N.J.

Filed Jul. 16, 1979, Ser. No. 58,051
Int. Cl.³ B65G *69/06*
U.S. Cl. 222—1 **9 Claims**

1. A material activator device to initiate the free flow of material or remove disruptive materials from a containment vessel, comprising at least one injector means for introducing sequential energy bursts of compressed gas into the containment vessel, programmer means for regulating the length of

the energy bursts, the intervals between the energy bursts and the number of the energy bursts in each sequential burst pattern, each said length of the energy bursts and the intervals between the energy bursts being in an adjustable programmer signal range of 20 to 100 milliseconds establishing said sequential burst pattern of multiple linked sequential energy bursts which act on moving particles of material before the moving



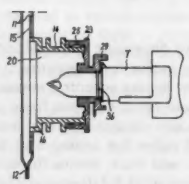
particles come to rest, said programmer means also establishing different intervals than the intervals between the energy bursts so as to create separated sequential burst patterns, whereby the sequential energy bursts of compressed gas in each sequential burst pattern provide multiple linked impact, aeration and vibration forces at or near sonic frequency to induce free flow of material or dislodge disruptive materials in the containment vessel.

4,325,496

FILLING-DISPENSING CLOSURE FOR A BAG-LIKE CONTAINER

Jon H. Malpas, Ocean Grove, Australia, assignor to Diemoulders Proprietary Limited, Leopold, Australia

Filed Aug. 22, 1980, Ser. No. 180,310
Int. Cl.³ B67B 7/26
U.S. Cl. 222—83 **7 Claims**



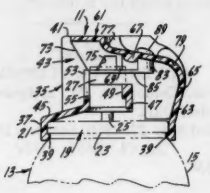
1. A filling-dispensing neck member (14) and closure member (23) combination for a bag-like container (11), said neck member (14) having a passageway (20) through which liquid may be caused to flow into the bag-like container (11) and through which liquid may be dispensed, said closure member (23) having a socket (30) for the reception of a barrel of a dispensing tap (T), an oxygen impermeable diaphragm (34) across said socket (30), means (35) in said socket (30) for restraining the barrel of the tap (T) against longitudinal movement once the tap (T) is engaged in it and has broken the diaphragm (34), said closure member (23) having a circumferential skirt (25) adapted to fit over and engage with the outer end of the neck member (14) and said skirt (25) having at least one internal circumferential rib (32) for locking engagement with an external complementary bead (19) on the outer end part of the neck member (14).

4,325,497

CHILD-RESISTANT SPRAY THROUGH COVER

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Knight Engineering & Molding Co., Arlington Heights, Ill.

Filed Mar. 6, 1980, Ser. No. 127,594
Int. Cl.³ B65D 83/14; B67D 5/32
U.S. Cl. 222—153 **14 Claims**



1. A child-resistant spray through cover for aerosol and similar containers which cover assembly can be applied to a container having a conventional actuator button of the type in which the actuator button discharges through an outlet when the button is depressed, said cover assembly including:

a housing adapted to fit over the actuator button and to be securely attached to the container,

an opening formed in the housing to allow the passage of spray discharged through the discharge outlet of the actuator button,

a flap mounted on the housing and extending over the actuator button with the flap being movable across the actuator button upon the application of force applied thereto by a finger of a user between a first position and a second position,

the flap being positioned out of actuating engagement with the actuator button when located in the first position and being positioned in actuating engagement with the actuator button in the second position,

means operative when the flap is in the first position and inoperative when the flap is in the second position to prevent vertical movement of the flap into actuating engagement with the actuator button,

locking means associated with the flap to restrain the flap in its first position,

finger engaging means for releasing the locking means to permit the flap to be moved to its second position, and

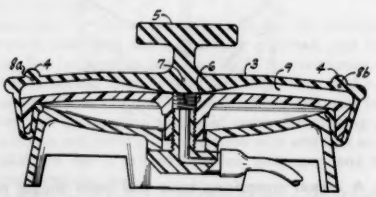
biasing means to return the flap to its first position and the locking means to its flap retaining association when the application of force to the flap is discontinued.

4,325,498

PRESSURIZED PORTABLE ELASTIC MEMBRANE LIQUID CONTAINER

Quentin T. Kelly, Hopewell, N.J., assignor to Pressurized Products, Inc., Princeton, N.J.

Filed Nov. 19, 1979, Ser. No. 95,602
Int. Cl.³ B65D 37/00
U.S. Cl. 222—210 **3 Claims**



1. A self pressurized portable container for liquid comprising: a bottom sealing ring plate having a passage therethrough; a pressure plate of substantially circular shape having a bore

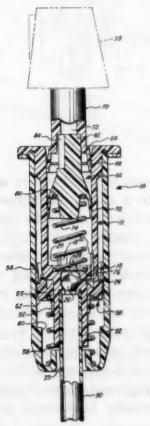
therethrough adapted for the passage of liquid therethrough from above and below upper and lower faces thereof, said bottom sealing ring plate being nested and seated against said lower face with said passage substantially aligned with said bore; and an injection molded substantially circular elastic membrane having a continuous upper wall positioned above said upper face and having circumscribing edges thereof mounted and sealably anchored between said pressure plate and said bottom sealing ring plate at the circumscribing perpheries thereof, said circular elastic membrane having an integrally molded handle extending upwardly from a first central location on a top surface of said circular elastic membrane; the improvement comprising a boss extending downwardly from a second central location on a lower surface of said circular elastic membrane, further comprising a second bose in a form of a circular ridge located at injection points of said circular elastic membrane such that the circular ridge at substantially all points is equidistant from and circumscribes said second central location thereby providing for equal expansion and stress on the circular elastic membrane during expansion thereof; whereby rupture cracks are avoided.

4,325,499

EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,567
Int. Cl.³ B05B *11/02*
U.S. Cl. 222—321 **10 Claims**



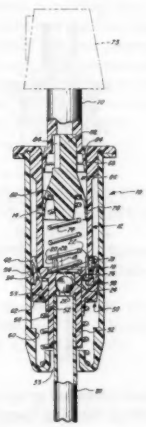
1. A finger operated extended spray pump comprising:
a. an outer cylindrical housing having an upper end and a lower end;
b. an inner cylindrical housing fitted inside the upper end of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing and a valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;
c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;
d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;
e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;
f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;
g. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;
h. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;
i. nib means located on the inside wall of said inner housing for deflecting the edge of said middle piston to allow air or liquid beneath said middle piston to flow upwardly around the outside edges of said piston; and,
j. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,500

EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,612
Int. Cl.³ B05B *11/02*
U.S. Cl. 222—321 **10 Claims**



1. A finger operated accumulative spray pump comprising:
a. an outer cylindrical housing having an upper end and a lower end;
b. an inner cylindrical housing fitted inside the upper ends of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing, and a first valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;
c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;
d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;
e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;
f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;
g. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower

piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;

h. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;

i. an orifice means located in the sidewall of said inner cylindrical housing for admitting liquids located on the outside of said inner cylindrical housing into the interior of said inner cylindrical housing between said upper piston and said middle piston; and,

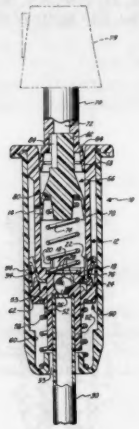
j. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,501

EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,761
Int. Cl.³ B05B *11/02*
U.S. Cl. 222—321 **10 Claims**



1. A finger operated extended spray pump comprising:

a. an outer cylindrical housing having an upper end and a lower end;

b. an inner cylindrical housing fitted inside the upper end of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing and a first valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;

c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;

d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;

e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;

f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;

g. second valve means for preventing backflow of liquid through said port means;

h. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;

i. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;

j. an orifice means located in the sidewall of said inner cylindrical housing for admitting liquids located on the outside of the inner cylindrical housing into the interior of said inner cylindrical housing between said upper piston and said middle piston; and,

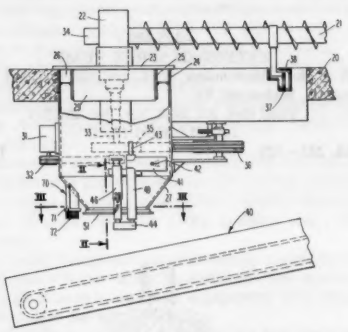
k. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,502

DISCHARGE CLOSURE FOR SILO UNLOADER

Richard L. Weaver, R.D. 4, Myerstown, Pa. 17067

Filed Sep. 26, 1980, Ser. No. 191,072
Int. Cl.³ B67D *5/01*
U.S. Cl. 222—504 **8 Claims**



1. In a silo unloader of the bottom unloader type wherein silage is conveyed to a silage discharge chute generally centrally disposed at the lower end of the silo; said discharge chute having a discharge opening at the lower end thereof, and an openable single closure in closing relation to said discharge opening, the improvement comprising means for driving said closure in a single compound opening motion, both generally vertically downwardly and laterally transverse of the direction of silage flow through said opening, to open said opening, and in a single compound returning motion both laterally transverse and generally vertically upwardly, to close said opening, said means for driving said closure serving to maintain said closure in a substantially horizontal attitude throughout its motion.

4,325,503

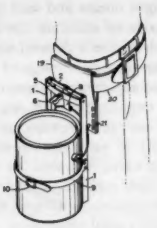
PAINTER'S BELT-ON BRUSH AND BUCKET HOLDER AND CARRIER

Glen E. Swinney, Rte. 1, Box 234-A, Axton, Va. 24054

Filed Jan. 21, 1981, Ser. No. 225,971
Int. Cl.³ A46B *17/00*
U.S. Cl. 224—148 **5 Claims**

1. A holder for carrying a paint can on the person of the painter comprising (1) a rack directly attachable to said can for securely holding it, comprising: a pair of parallel upright elements, strap means for firmly attaching the can against said elements, support means at the lower part of said rack provided with an upwardly directed lip adapted to fit under and retain the circular rim at the bottom of the paint can, (2) a supporting member adapted to be carried by a belt and held thereby against the side of the painter, having thereon an outwardly extending member attached by hinge means for limited movement on a horizontal axis disposed paralled to the side of the painter, and (3) a connecting link pivotally con-

nected to an upper portion of the rack for free frictionally inhibited rotational movement of the rack about a horizontal axis under the influence of gravity and also pivotally connected to said hinged element of said supporting member for adjustably positioning said can forwardly or rearwardly about a vertically disposed axis.



4,325,504

MAGNETIC DEVICE ADAPTED TO BE WORN ON THE ARM OR WRIST FOR HOLDING NAILS AND THE LIKE

Nader Amani, 1122 S. Highland Ave., Oak Park, Ill. 60304

Filed Dec. 16, 1980, Ser. No. 216,797
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—183 **3 Claims**

1. In a magnetic device adapted to be worn on the arm or wrist for holding magnetizable items such as nails and the like, said device comprising in combination:

a bracelet band adapted to encircle the user's arm or wrist; and

a circular magnet of U-shaped cross-section supported on the bracelet band and having bare coplanar north and south poles in a plane generally parallel to the bracelet band facing outwardly to attract nails and the like and to retain them readily available to the user;

the improvement comprising a relatively soft annular collar of rubberlike cushioning material encircling and coplanar with the magnet below its outer face to protect the magnet from striking external objects.

4,325,505

FLAP HOLSTER

Chester K. Hillman, P.O. Box 1272, Twin Falls, Id. 83301

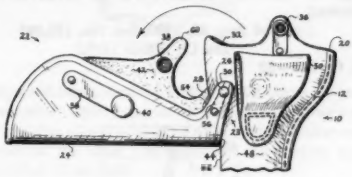
Filed Jun. 2, 1980, Ser. No. 155,510
Int. Cl.³ F41C *33/02*
U.S. Cl. 224—238 **5 Claims**

1. A holster for a handgun comprising:

a case member for the handgun having a barrel receiving portion having a longitudinal surface that overlies the top of the barrel when the handgun is holstered;

a flap member having a closed position which substantially covers the top of said case member, said flap member having an end part including portions lying adjacent to and on either side of said longitudinal surface when said flap member is in said closed position;

an offset hinge member for mounting said flap member to said case member and comprising a pair of laterally spaced-apart pivot arms adjacent to and including said portions of said end part to downwardly depend from said flap member in said closed position, said spaced-apart pivot arms having an imaginary horizontal axis of rotation extending therebetween;



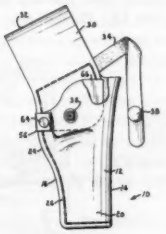
pivot means for mounting said pivot arms to said case member adjacent said longitudinal surface with said imaginary horizontal axis extending through said longitudinal surface, said pivot means providing for a swingable movement of said pivot arms to a position downwardly depending from said horizontal axis and generally forward of said case member to concurrently position said flap member in an overcenter position below said horizontal axis of rotation and to the front of said case to substantially maintain said flap member in an open position.

4,325,506

REINFORCING ARRANGEMENT FOR IMPROVING THE STRENGTH AND DURABILITY OF A FIREARM HOLSTER

James W. Lindell, 10600 E. 109th St., Kansas City, Mo. 64134, and Arthur F. Barnett, 12005 E. 55th Terr., Kansas City, Mo. 64133

Continuation-in-part of Ser. No. 43,360. This application Mar. 31, 1980, Ser. No. 136,102
Int. Cl.³ F41C *33/02*
U.S. Cl. 224—243 **7 Claims**



1. In a gun holster having a tubular shaped body structure with an open uppermost end, said tubular shaped body structure being formed by an inner wall with a back edge and an outer wall with an inner surface, an outer surface and a back edge wherein the back edge of the inner wall is attached to the back edge of the outer wall to provide a back seam, the improvement therein of a reinforcing arrangement for strengthening said back seam and outer face, said reinforcing arrangement comprising:

a reinforcing piece having a body portion and a protruding arm portion;

said reinforcing piece being attached to said outer wall such

that the body portion of said reinforcing piece is in proximity to the open uppermost end of said body structure and such that the protruding arm portion of said reinforcing piece is arranged to extend around the back edge of said outer wall; and

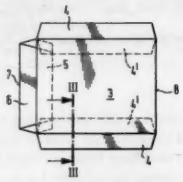
a fastener for effectively securing said outer wall to said inner wall.

4,325,507

PACKAGE CARTON AND PROCEDURE FOR ITS MANUFACTURE

Veikko I. Janhonen, Langvik, Jorvas, 02420 Kirkkonummi, Finland

Filed Aug. 25, 1980, Ser. No. 180,985
Int. Cl.³ B65D *33/02*
U.S. Cl. 229—55 **5 Claims**



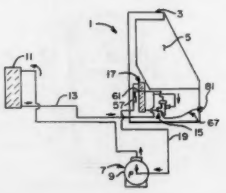
1. Package for books, cassettes and equivalent flat goods, comprising an inner, double folded supporting member having front and back portions and secured to an outer cover of a thin flexible material having a flap extending along each free edge of said front and back portion, each of the two flaps along opposite edges of said member adjacent to the back portion thereof being inserted between the front portion of said member and said cover secured thereto and secured to said member front portion, and the other two of said flaps along the opposite edges of said front portion being folded over the cover of the back portion of said member and secured to said cover.

4,325,508

THERMOSTATIC EXPANSION VALVE WITH REMOTE ADJUSTMENT

Bernard L. Kunz, Madison, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 2, 1980, Ser. No. 136,442
Int. Cl.³ F25B *41/04*
U.S. Cl. 236—92 B **1 Claim**



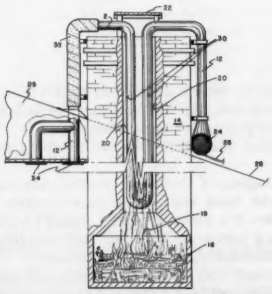
1. In a thermostatic expansion valve for a refrigeration system, said valve comprising a valve housing having a flow path therethrough, said flow path having an inlet, an outlet, and an expansion valve seat constituting an expansion port between said inlet and said outlet, said inlet and said outlet being adapted to be connected to a liquid line of the refrigeration system for the passage therethrough of pressurized refrigerant, a valve member movable toward and away from said valve seat thereby to regulate the flow of refrigerant through said flow path, a compression coil spring for biasing said valve member toward a closed position in which said valve member cooperates with said valve seat thereby to regulate the flow of refrigerant through said flowpath, expansion bulb and diaphragm means operatively connected to said valve member responsive to the load on said refrigeration system, said expansion bulb and diaphragm means and said spring operating on said valve member so as to maintain the flow of refrigerant through said flow path within a desired superheat range, and means for adjusting the superheat range of the thermal expansion valve, this last-said adjustment means comprising a spring compression member engageable with one end of said spring and being selectively movable thereby to compress or relax said spring and thereby to vary the superheat range of said thermostatic expansion valve, wherein the improvement comprises: an adjustment stem rotatable with respect to said valve housing and being engageable with said spring compression member thereby to effect axial movement of said spring compression member upon rotation of said adjustment stem, an elongate flexible shaft, one end of said flexible shaft being coupled to said adjustment stem, said flexible shaft having a drive member on its outer end, rotation of said drive member effecting corresponding rotation of said adjustment stem thereby permitting convenient adjustment of the superheat range of said thermal expansion valve from a location remote from said thermal expansion valve, said adjustment means further comprising seal means for sealing said adjustment stem with respect to said valve housing and for permitting rotation of said adjustment stem by said flexible shaft, said seal having a groove therein facing toward the pressurized refrigerant, the latter acting on portions of said seal to positively force the seal into sealing engagement with the stem.

4,325,509

HOME HEATING APPARATUS

Leonard C. Base, Rte. #3, Kingman, Kans. 67068

Filed Oct. 9, 1979, Ser. No. 82,610
Int. Cl.³ F24B *7/00*
U.S. Cl. 237—51 **3 Claims**

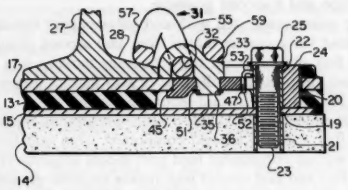


1. A heating apparatus for a dwelling having a fireplace with a flue comprising a conduit having an inlet terminating in the exterior of the dwelling and a discharge terminating within the dwelling, said conduit communicating with said flue; an exterior air intake blower attached to said exterior to enhance circulation; said conduit has a structure defining a U-shaped section within said flue, said conduit extending down said flue to be in close proximity with any heating means within said fireplace, said conduit exiting out of said fireplace into the atmosphere in proximity to the point of entry of said conduit into said fireplace and enters said dwelling at a place remote from said fireplace; and insulation means surrounding said conduit between said fireplace and said dwelling.

4,325,510
ADJUSTABLE SPRING CLIP

James W. Sherrick, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jun. 23, 1980, Ser. No. 162,239
Int. Cl.[3] E01B 9/30, 9/46
U.S. Cl. 238—341 4 Claims



1. In a base assembly for removeably mounting a rail on a support structure, said base assembly including a layer of resilient elastomeric material disposed between and attaching to a base plate and a top plate, said base assembly having anchoring means adjacent each end for attaching said base assembly in a fixed position to said support structure, said rail being positioned on said top plate and being secured thereto by a pair of resilient rail clips disposed on opposite sides of said rail, said rail clips having an anchoring section and first and second bearing sections, said top plate having a cut-out on opposite sides of said rail, a pair of grooves being formed in said top plate about the circumference of said cut-out, the improvement comprising laterally adjustable rail clip fastening means, said rail clip fastening means including:

a pair of sections of rigid material each having a curved portion at one end and a straight portion, said sections having a shaft attached to the underside of said straight portion at a point offset from the center thereof;

a pair of discs for insertion into said cut-outs of said top plate on opposite sides of said rail and being rotatable therewithin, said discs being formed with a bore offset from the center and having a plurality of teeth along a portion of the circumference thereof, said shaft of said sections of rigid material being inserted into said bore of said discs and being held thereto by retainng means, said disc being inserted within said cut-outs such that said teeth align with the grooves of said cut-outs whereby rotation of said discs within said cut-outs moves said sections of rigid material laterally along said top plate, said discs being rotatable to move said sections of rigid material into contact with said rail for resisting lateral movement thereof; and

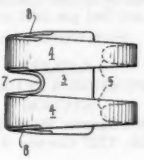
a pair of locking means insertable within said groove and extending outwardly into engagement with said teeth of said discs on opposite sides of said rail, said locking means preventing rotation of said discs within said cut-outs and thus securing said sections of rigid material from lateral movement along said top plate, whereby said anchoring section of each of said rail clips is inserted within said curved portion of said sections of rigid material on each side of said rail to securely hold said rail clips in a position wherein said first bearing section contacts said rail, and in cooperation with said rail clip fastening means prevents movement of said rail relative to said base assembly.

4,325,511
METHOD FOR FORMING RAIL CLIPS

Hartley F. Young, Melton, Australia, assignor to Ralph McKay Limited, Victoria, Australia

Filed May 4, 1979, Ser. No. 36,148
Claims priority, application Australia, May 8, 1978, PD4318
Int. Cl.[3] E01B 9/28; B21D 53/36
U.S. Cl. 238—349 5 Claims

1. A method of forming integral rail clips of the kind in which one portion of the clip is secured by clip holding means to a rail tie and a second portion overlies the foot of a rail comprising a blanking a generally U-shaped clip having tapered arms from metal plate , forming the blank into a three dimensional shape wherein the arms of the U curve over the base and terminate beyond the base, and coining the edges of

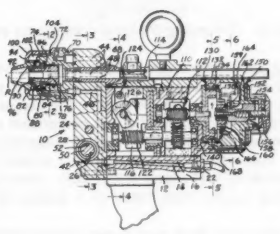


said clip adjacent the base of the U where said clip is subjected to maximum stress during use, said base corresponding to the portion of the clip which is secured by the clip holding means and the ends of the arms correspond to the portion which overlies the foot of the rail.

4,325,512
FLAME SPRAY GUN

Kenneth W. Kenshol, Berkeley, Ill., assignor to Norton Company, Worcester, Mass.

Filed Feb. 4, 1980, Ser. No. 118,472
Int. Cl.[3] B05B 7/18
U.S. Cl. 239—84 25 Claims



1. A flame spray gun having a gun body including a base portion, a front wall portion supporting a combustion head including a flame spray nozzle and an air blast cap, and a housing portion supporting adjustable drive means including a turbine, a gear train, speed control means and feed rolls for engaging and feeding a wire or rod of material through a guideway opening in the combustion head and nozzle to be melted by a flame and sprayed by a blast of air onto a substrate and conduit means for supplying air to the air cap and turbine and an oxidant and fuel gas to the flame spray nozzle from regulatable sources of supply under pressure, wherein the improvement comprises:

valve means connected to the conduit means and the gun body for selectively and simultaneously either cutting off or supplying air to the air blast cap and turbine and the oxidant and fuel gas to the flame spray nozzle from the regulatable sources of supply under pressure comprising:

a bore;

air, oxidant and fuel gas inlet chambers axially spaced in the bore and connected to respective air, oxidant and fuel gas inlet passages of the conduit means connectable with the sources of supply;

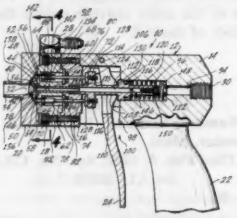
air, oxidant and fuel gas outlet chambers adjacent the respective air, oxidant and fuel gas inlet chambers in the bore and connected to respective air, oxidant and fuel gas outlet passages of the conduit means connectable with the air cap and flame spray nozzle;

seal retaining grooves between and adjacent each side of the air, oxidant and fuel gas inlet and outlet chambers;
a continuous seal in each of the seal retaining grooves; and
a valve shaft including axially spaced slots of predetermined axial length and radial depth axially moveable within the bore and the continuous seals to an ON position whereby the slots simultaneously connect the air, oxidant and fuel gas inlet and outlet chambers.

4,325,513
GUN FOR DISPENSING A PLURAL COMPONENT SYSTEM

Robert L. Smith, 2012 Summer Wind, Santa Ana, Calif. 92704, and Gary L. Smith, 1287 Conway Ave., Costa Mesa, Calif. 92026

Filed Mar. 20, 1980, Ser. No. 132,251
Int. Cl.³ B05B *7/04, 7/12, 15/02*
U.S. Cl. 239—112 **11 Claims**

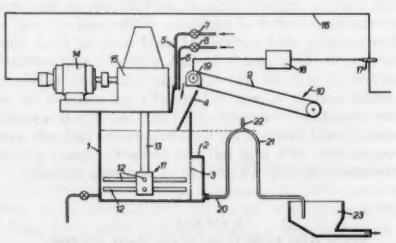


1. A gun for dispensing a plural component system which comprises:
a housing including a first component receiving means, a second component receiving means and a gas receiving means, said first component receiving means connectable to a pressurized source of a first component of said plural component system, said second component receiving means connectable to a pressurized source of a second component of said plural component system and said gas receiving means connectable to a source of pressurized gas;
a first component feed port means connected to said first component receiving means and receiving a pressurized supply of said first component of said plural component system from said first component receiving means;
a second component feed port means connected to said second component receiving means and receiving a pressurized supply of said second component of said plural component system from said second component receiving means;
a first valve means located in said first component feed port means;
a second valve means located in said second component feed port means;
a valve carrier means movably located in said housing;
said first valve means and said second valve means operatively connected to said valve carrier means and movable within said first and said second component feed port means respectively in response to movement of said valve carrier means;
a gas passage means connected to said gas receiving means and receiving a supply of pressurized gas from said gas receiving means, said gas passage means including a gas valve means, said gas valve means operatively connected to said valve carrier means and moving in response to movement of said valve carrier means;
a static mixing chamber means attaching to said housing and including a mixing chamber, a discharge outlet connecting to said mixing chamber, a first component inlet means connecting to said mixing chamber, a second component inlet means connecting to said mixing chamber and a gas inlet means connecting to said mixing chamber, said gas inlet means operatively connected to said gas passage means, said first component inlet means operatively connected to said first component feed port means and said second component inlet means operatively connected to said second component feed port means;
trigger means movably mounted on said housing, said valve carrier means operatively associated with said trigger means, said valve carrier means moving between a first position and a second position;
biasing means associated with said valve carrier means biasing said valve carrier means from said second position to said first position, said trigger means moving said valve carrier means against the bias of said biasing means from said first position to said second position;
said first and said second valve means prohibiting the flow of said first and said second component from said first and said second component feed port means respectively into said first and said second inlet means respectively and said gas valve means allowing flow of said pressurized gas from said gas passage means into said mixing chamber through said gas inlet means when said valve carrier means is in said first position and said first and said second valve means allowing flow of said first and said second components from said first and said second component feed port means into said first and said second component inlet means respectively and into said mixing chamber and controlling the flow of said pressurized gas from said gas passage means into said gas inlet means when said valve carrier means is in said second position;
said first and said second components flowing into said mixing chamber and being discharged out of said discharge outlet when said valve carrier means is in said second position and said pressurized gas flowing into said mixing chamber and discharging the contents of said mixing chamber out of said discharge outlet when said valve carrier means is in said first position.

4,325,514
COMMINUTION OF MINERALS

Herbert Hemingsley, Marina-di-Carrara, Italy, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, England

Continuation of Ser. No. 880,875, is a continuation-in-part of Ser. No. 747,107, Dec. 3, 1976, abandoned. This application Sep. 10, 1979, Ser. No. 73,880
Claims priority, application United Kingdom, Dec. 5, 1975, 50112/75
Int. Cl.³ B02C *25/00*
U.S. Cl. 241—16 **6 Claims**



1. A method for comminuting a mineral using essentially an autogenous grinding technique, which method comprises the following steps:
(i) breaking any large lumps of mineral present to obtain a product substantially all of which consists of pieces not larger than 20 mm;
(ii) introducing into a grinding chamber which has an internal, rotatable impeller driven by an electric motor, water,

a dispersing agent and the product of step (i) to form slurry;

(iii) agitating the slurry in said grinding chamber;

(iv) continuously withdrawing from the grinding chamber a slurry of comminuted mineral;

(v) maintaining the volume of slurry in said grinding chamber substantially constant; and

(vi) maintaining the power consumed by the electric motor between upper and lower limits by controlling the amount of the product of step (i) introduced into the grinding chamber;

wherein there is present in said grinding chamber during the agitation of said slurry no particulate solid material other than that added as the product of step (i); and wherein the rates of introducing said water, said dispersing agent and said product of step (i) into said grinding chamber and the rate of withdrawing the slurry of comminuted mineral from the grinding chamber are such that the slurry of comminuted mineral withdrawn from the grinding chamber contains at least 50% by weight of solids.

4,325,515

MIXING APPARATUS AND METHOD FOR CONDENSING, MIXING AND GRANULATING THERMOPLASTIC MATERIALS

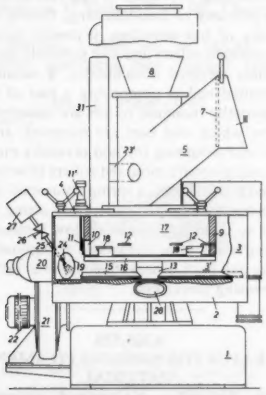
Friedrich W. Herfeld, Wall 1, 5982 Neuenrade, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,304

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815935

Int. Cl.³ B02C *18/12, 18/22, 21/00*

U.S. Cl. 241—57 **7 Claims**



1. In mixing apparatus for condensing, mixing and granulating thermoplastic materials, especially scrap of foils, fibres, ribbons and hollow pieces, having a mixing container, a feed hopper mounted on the mixing container, a discharge slide valve, a vertical agitator shaft in said container which near the bottom carries stirring wings extending radially close to the container wall and at its upper end carries crushing knives, a crushing chamber defined by the upper portion of said container and surrounded by a ring wall and having its bottom defined by an end plate, said ring wall having fixed counterknives thereon, the improvement comprising the arrangement wherein the agitator shaft **(13)** extends through said end plate **(16)** of the crushing chamber **(17)**, and wherein said ring wall **(9)** is provided with at least one shuttable port **(10)** leading from said crushing chamber portion **(3')** of the mixing container **(2)** into the mixing portion of said container.

4,325,516

APPARATUS FOR THE GRINDING OF SURPLUS BREAD

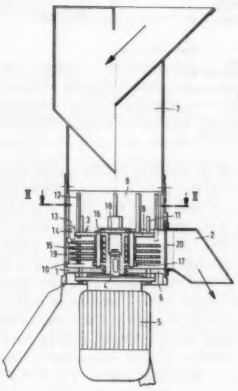
Theodor Ismar, Cologne, Fed. Rep. of Germany, assignor to Ismar GmbH, Cologne, Fed. Rep. of Germany

Filed Sep. 14, 1979, Ser. No. 75,731

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 7827589[U]

Int. Cl.³ B02C *13/26*

U.S. Cl. 241—73 **5 Claims**



1. A grinding mill for grinding surplus bread comprising:

an upright cylindrical housing;

a single rotor disc centrally rotating within said housing and having an upper side, a lower side, and a rim;

a plurality of paired pre-cutting knives arranged at right angles to a radius of said rotor disc and mounted on said upper side of said rotor disc;

a plurality of mill hammers attached to the lower side of the rotor disc;

a plurality of breaker strips mounted on the inner wall of the cylindrical housing adjacent the precutting knives and forming a preliminary grinding device in a preliminary grinding chamber;

a plurality of breaker strips mounted on the inner wall of the cylindrical housing adjacent the mill hammers and forming a hammermill in a grinding chamber;

said cylindrical housing and said rotor disc rim forming an annular gap therebetween and connecting said preliminary grinding chamber and said grinding chamber;

a plurality of feeding teeth rotatably mounted within said annular gap on the rim of said rotor disc at an inclined angle to the horizontal such that a top edge portion of said plurality of feeding teeth comprises a leading edge; and

a strainer operatively associated with said cylindrical housing through which finished ground stock is communicated from the grinding mill.

4,325,517
METHOD AND APPARATUS FOR WINDING TEXTILE YARNS

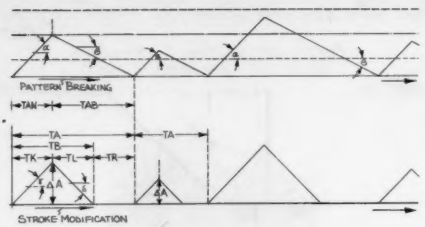
Heinz Schippers; Gerhard Martens, both of Remscheid, and Karl-Werner Frolich, Wuppertal-Langerfeld, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,568

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937601

Int. Cl.³ B65H *54/38*

U.S. Cl. 242—18.1 **27 Claims**



1. In a method of winding textile yarns into core-supported packages in which the yarn is wound about the core at a substantially constant rate while the yarn is guided onto the core by a traversing yarn guide, the improvement therein comprising controlling the traverse of the yarn guide in a recurrent series of stroke modification cycles in each of which the length of the strokes of the yarn guide is progressively decreased at each end of the stroke up to a maximum differential range and progressively increased again at each end of the stroke up to a maximum constant stroke length during one portion of the cycle and is constant at that maximum stroke length during another portion of the cycle, and in which the maximum differential range by which the length of the strokes of the yarn guide is decreased is changed from one stroke modification cycle to another to prevent the formation of thickened and hardened places in the yarn package at opposite ends thereof.

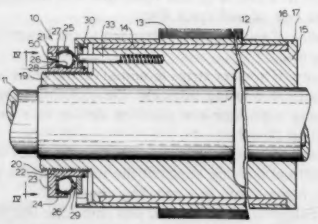
4,325,518
REEL SPOOL PNEUMATIC CORE CLAMP

Gerald W. Karr, South Beloit, and Robert E. Page, Davis, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 6, 1980, Ser. No. 204,604

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—68 **14 Claims**



1. Apparatus for clamping a hollow core on a rotatable shaft comprising:

a hub member having attachment means for securing said hub member on said shaft,

a hollow, resilient tube mounted on said hub member,

means for inflating said tube with pressure,

a sleeve means slideably received on said shaft for having one end abut with a free end of said core, and

a locking means, positioned between said tube and sleeve means and having corresponding surfaces engageable with respective regions on said tube and sleeve means, whereby said tube, upon inflating, presses against said locking means to cause said sleeve means to grippingly engage said core.

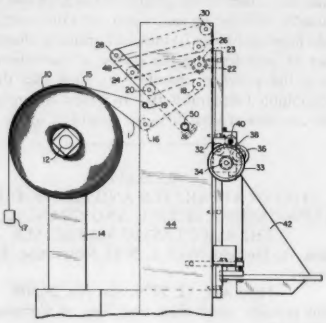
4,325,519
SHEET MATERIAL DISPENSING MECHANISM

John R. McLean, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 29, 1980, Ser. No. 192,009

Int. Cl.³ B65H *23/08*

U.S. Cl. 242—75.41 **4 Claims**



1. An apparatus for dispensing sheet material from a roll comprising a reel upon which said roll is mounted, brake means for preventing overcoast of said roll during dispensing therefrom, a plurality of free-wheeling, fixedly mounted rollers, a plurality of free-wheeling, pivotally mounted rollers, said fixedly mounted rollers and said pivotally mounted rollers forming a sheet material accumulator, a mounting for said pivotally mounted rollers comprising a pair of bars between which said pivotally mounted rollers are mounted and a rotatable rod upon which said bars are mounted, an air cylinder connected to said mounting for said pivotally mounted rollers for pivoting said pivotally mounted rollers to accumulate sheet material in said accumulator, a spring connected to said mounting for said pivotally mounted rollers and acting to oppose the action of said air cylinder to maintain low tension in said sheet material during holding thereof in said accumulator and means for preventing pull back of said sheet material into said apparatus after dispensing therefrom.

4,325,520
APPARATUS FOR STORING FILAMENTARY MATERIAL

Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 6,915, Jan. 26, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,423

Claims priority, application Switzerland, Jan. 31, 1978, 1024/78

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **3 Claims**

1. An apparatus for storing filamentary material, said apparatus comprising

a substantially cylindrical bobbin for receiving a plurality of windings of filamentary material thereon;

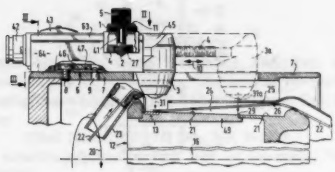
a frame extending over said bobbin;

means for controlling the axial extent of the windings of filamentary material on said bobbin, said means including a sensing element for detecting the presence of a winding at a predetermined point on said bobbin;

a guide beam of U-shaped cross-section secured to said

frame and having a pair of outstanding limbs positioned over said bobbin;

a support slidably mounted in said guide beam between and within said limbs and having said sensing element secured thereto in depending relation, said support being movable in and along said guide beam to adjust said sensing element relative to said bobbin whereby to adjust said point; and



an adjustment means for adjusting said support longitudinally of said guide beam, said adjustment means including a plurality of teeth on one of said guide beam and said support and a gear wheel on the other of said guide beam and said support, said gear wheel being mounted for rotation on a fixed axle and in engagement with said teeth and a nut threaded on said axle for locking said gear wheel in place upon tightening of said nut towards said gear wheel.

4,325,521

HOSE LOOP CARRIER

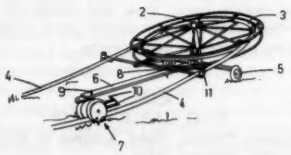
Brian R. Homersham, 17 Victoria Park Rd., Christchurch, New Zealand

Filed Sep. 3, 1980, Ser. No. 183,823

Claims priority, application New Zealand, Dec. 12, 1979, 192380

Int. Cl.³ B65H *75/40*

U.S. Cl. 242—86.2 **11 Claims**



1. An irrigation hose loop support apparatus suitable for supporting the trailable loop of an irrigation hose in an irrigation system where a hose trailing irrigator moves towards and usually past a source of water to such a trailed hose, said support apparatus comprising

a trailable carriage,

means mounted on said carriage capable of receiving such a hose from a direction substantially in which said carriage is trailable, supporting the loop of said hose and allowing the return of said hose in a direction also substantially in the direction in which said carriage is trailable, said means being capable of allowing upon the pulling of the length of said hose in use in advance of said carriage to said irrigator, the movement of the hose of the loop about and or through said means, and

guide means capable of guiding th trailing locus of said carriage from at least one of the lengths of hose of said hose in advance of said carriage with respect to its trailable direction.

4,325,522

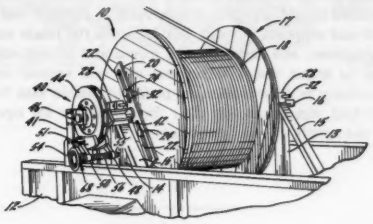
REEL BRAKE CLAMPING ASSEMBLY

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Oct. 27, 1980, Ser. No. 201,252

Int. Cl.³ B65H *59/04, 75/40*

U.S. Cl. 242—86.7 **4 Claims**



1. In a cable reel support and brake device such as may be used in connection with stringing power transmission lines, the combination comprising, spaced upright column means, a reel support shaft having provision to fixedly receive a cable reel for rotation therewith bridging the column ends, brake device means mounted on spaced supporting members, a friction disc mounted on a shaft that is journalled to said supporting members and removably coupled to the reel support shaft, a pair of spaced brake clamping arms having brake shoe means at their ends facing the sides of the disc, said arms being carried by a shaft means having a wheel at its outboard end and a threaded end engaging nut means at its inboard end, spring means carried by said shaft between the said arms, said wheel adapted to move the arms toward one another upon rotation in one direction and the spring means moves the arms away from one another when rotated in the opposite direction, clamping means carried by said shaft and comprising a pair of spaced dish shaped members having a resilient ring member therebetween, and said clamping means being disposed such that rotation of said wheel in the direction that moves the brake shoe means at the ends of the clamping arms into engagement with the sides of the friction disc urges said spaced dish shaped members toward one another and compresses the resilient ring thereby providing positive settings of "drag" on said cable reel through the friction brake device.

4,325,523

FILM ADVANCING ARRANGEMENT

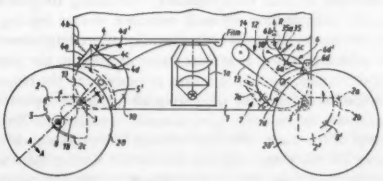
Peter Ungnadner, Unterhaching; Peter Blöckinger, Neuried; Friedrich Winkler, Unterhaching, and Peter Lermann, Naring, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 150,408

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919710

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—205 **9 Claims**



1. A film advancing arrangement for a film projector of the type having a housing and an optical system, comprising a first spool support having an axis for carrying a supply spool and a second spool support having an axis for carrying a takeup

spool, said spool supports being pivotally movable from an outside position to an inside position with respect to the housing of the projector so that spools mounted on said axes be disposed inside of said housing when spools of small diameters are utilized and the spools be positioned outside of said housing when spools of large standard diameters are used in the projector; two pivots mounted at lower corners of said housing and connected to said supports, respectively to provide said pivoting of said supports through 180° between the inside and outside positions; and first adjusting means and second adjusting means to arrest said first support and said second support, respectively in their stationary positions within said housing when said supports reach their final positions for operation with the spools of small diameters.

4,325,524

TRACK MONITORING DEVICE

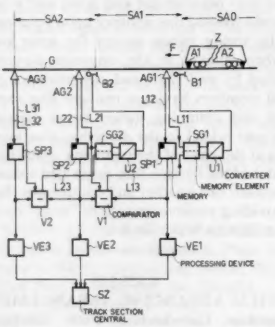
Adolf Krug, Braunschweig, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,009

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910770

Int. Cl.³ B61L *25/00, 27/00*

U.S. Cl. 246—34 R **4 Claims**



1. In a track monitoring device in which individual interrogation devices are provided at the respective boundaries between succeeding track sections, which interrogation devices respectively trigger the release of an occupied or release report for the track section which, in the direction of travel, lies ahead of or behind the train involved, on the basis of the reception of data respectively coded in a response device at the head and at the rear end of each train regularly traversing the track sections, the combination of each response device having allocated thereto one data part of a plurality of predetermined data parts, which plurality is at least twice as great as the plurality of regular trains, switching means responsive to the respective interrogation devices for triggering an occupied report of the track section respectively lying directly ahead, in the direction of travel of the train, allocated to each interrogation device, a memory for each interrogation device for storing data respectively received last, and a comparison device for comparing the memory contents of adjacent triggered memories for triggering a release report upon coincidence of the currently received data with the last received data at the last boundary between two track sections, which boundary lies rearward in the direction of travel.

4,325,525

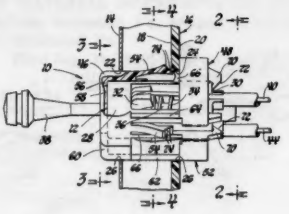
MOUNTING MEMBER

John E. Iafret, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1980, Ser. No. 206,614

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.3 **2 Claims**



1. In combination with an actuator having a body portion with one end thereof supporting a control member and the other end thereof formed with an end cap, a mounting member for housing said actuator and connecting said actuator to a support panel having an opening formed therein, said mounting member comprising a front section for supporting one end of said actuator; a plurality of cantilevered sections integrally formed with and connected to said front section and surrounding said body portion of said actuator at substantially equally spaced intervals thereabout; each of said cantilevered sections having a pair of circumferentially spaced ribs, one of said pair of circumferentially spaced ribs being formed with a radially inwardly extending tab which is hook-shaped and serves to engage the other end of said actuator for maintaining said actuator within said mounting member; said pair of circumferentially spaced ribs extending rearwardly from said front section and being interconnected at their rear ends by a connector member; and a plurality of flexible spring arms integrally formed with said front section, said spring arms being movable radially inwardly towards said actuator when said mounting member is inserted into said opening in said support panel and being adapted to move radially outwardly to engage one surface of said support panel while said connector member engages the other surface of said support panel to thereby secure said mounting member in said opening.

4,325,526

FLAT CABLE CLAMP

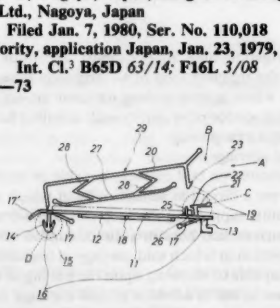
Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Jan. 7, 1980, Ser. No. 110,018

Claims priority, application Japan, Jan. 23, 1979, 54/7348[U]

Int. Cl.³ B65D *63/14*; F16L *3/08*

U.S. Cl. 248—73 **4 Claims**



1. A clamp for flat cables which comprises a synthetic resin board having engaging means for instantly securing said clamp to an object, a rockingly movable press board formed integrally with the base board at one of the longitudinal ends

thereof, which can be engaged with and disengaged from the other longitudinal end of the base board, a contact board in combination with resilient members formed integrally with said press board, said resilient members being in combination in the form of a pantograph, the contact board being capable of being resiliently displaced by means of said resilient members in the repulsive direction of the flat cables which are mounted on the base board and brought into contact with said contact board.

4,325,527

VEHICLE SEATS

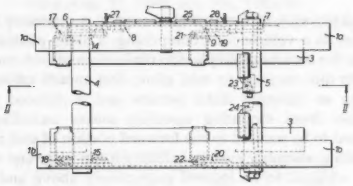
Hans-Jürgen Berneking, Porta Westfalica, Fed. Rep. of Germany, assignor to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG, Stadthagen, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,892

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851562

Int. Cl.³ A45D *19/04*

U.S. Cl. 248—394 **9 Claims**



1. In a vehicle seat,

a seat support for carrying a seat portion,

an elongate subframe for mounting on the vehicle floor,

a device lifting the seat support relative to the subframe in discrete steps and simultaneously moving the seat support longitudinally of the subframe, the lifting device comprising,

a pair of pivotal levers located one at each longitudinal end of the subframe,

spring means mounted at one longitudinal end of the subframe, the spring means being so arranged as to be tensioned upon movement of the seat support from the raised to the lowered position,

a pair of toothed segments located one at each longitudinal end of the subframe and at least one of which is pivotally connected to a corresponding one of the pivotal levers to form a pivotable linkage, with opposite ends of the linkage being pivotally connected respectively to the seat support and subframe, whereby relative movement between the members of the pivotable linkage causes the lifting of the seat support and simultaneously its movement longitudinally of the subframe,

a pair of toothed pawls each located adjacent a corresponding one of the segments and biased into engagement with a corresponding segment whereby when engaged with the segment it locks the two members of the linkage against relative movement, and

release means operable to disengage the toothed pawls from their corresponding segments and so allow the spring means to effect the simultaneous lifting and longitudinal movement of the seat support relative to the subframe, the release means comprising

a pivotal two-arm lever, and

a pair of pivotal control levers associated with each said pawl, one of each set of associated pawl and lever defining a slot and the other of each set carrying a pin slidably engaging the slot whereby when the pivotal two arm lever is pivoted in one sense, one arm thereof displaces one of the control levers to effect disengagement of the associated pawl with its corresponding segment and when the two arm lever is pivoted in the opposite sense the other arm thereof displaces the other control lever to effect disengagement of its associated pawl from its corresponding segment.

4,325,528

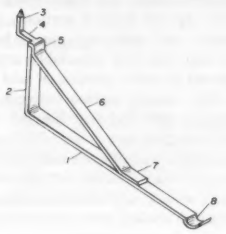
BRACKET MOUNTING

Jack T. Martin, 85 Leonard Ave., Washington, Pa. 15301

Filed Mar. 13, 1980, Ser. No. 130,011

Int. Cl.³ F16M *13/00*; E04G *5/06*

U.S. Cl. 248—217.2 **4 Claims**



1. A wall bracket of substantially right triangular shape comprising a horizontally extending base portion, a vertically extending portion of substantially smaller length and adapted to lean against a sidewall, and a brace portion forming the hypotenuse of the right triangular shape, and an extension which extends horizontally and vertically from the top of said vertically extending portion, said extension terminating in a point to enable penetrating a wall while said base portion is held vertically and thereafter pulling on the end of said base portion and rotating said bracket 90°.

4,325,529

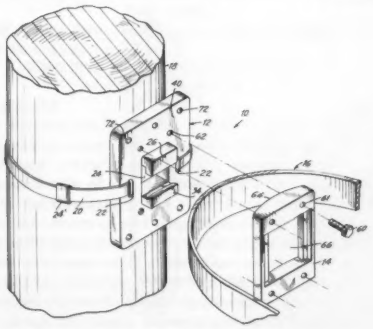
MOUNTING BRACKET ASSEMBLY

Frederick L. Seebinger, Kinnelon, N.J., assignor to American Trading and Production Corp., Pine Brook, N.J.

Filed Apr. 25, 1980, Ser. No. 143,951

Int. Cl.³ A47F *5/00*

U.S. Cl. 248—298 **2 Claims**



1. A mounting bracket assembly for adjustably supporting an object comprising:

a base, said base having two hooked portions extending from one face thereof, said two hooked portions being vertically displaced and opposed to each other to form a C-shape with said base, said base including an opening in said one face, said opening diverging away from said one face, said opening being partially obstructed by said vertically displaced hooked portions, the distance between said opposed hooked portions enlarging towards said one face

of said base, the opposed face of said upper hooked element being substantially perpendicular to said one face;

means for fixedly attaching said base to a mounting surface;

a bracket, said bracket including means for attachment to said supported object, a curved segment, a portion of said curved segment being slidably constrained between said two hooked portions and said one face of said base, said opening in said one face providing clearance with said curved segment, said curved segment when tilted being adapted to pass between said opposed hook portions to be constrained between said base and said hook portions, said curved segment when not tilted being unable to pass between said opposed hooked portions;

clamping means, said clamping means being removably attached to said base and, adjustably urging said curved segment against at least a portion of said one face of said base such that relative motion between said base, said curved segment and said two hooked portions is prevented, said clamping means including a curved surface, said curved surface mating with said curved segment, said curved segment being sandwiched between said base and said clamping means, said clamping means including an opening, said two hooked portions extending through said opening in said clamping means,

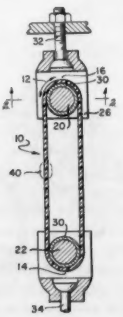
said supported object being constrained from separation from said base by said hooked elements and supported without said urging into a fixed position by said clamping means, said curved segment being slidable while constrained from separation until said clamping means is adjusted to fix the relative positions of said base and said curved segment.

4,325,530

CRYOGENIC STRUCTURAL SUPPORT

Ralph C. Niemann, Downers Grove; Karl F. Mataya, Lemont, and John D. Gonczy, Oak Lawn, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 2, 1978, Ser. No. 882,726
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—317 **2 Claims**



1. Tensile support member for use in a cryogenic environment, comprising:

an endless link formed of an epoxy glass laminate with at lease one ply of said laminate having fibers aligned circumferentially about said link; and

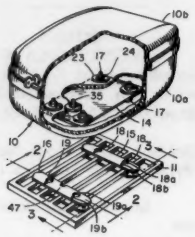
at least one intermediate heat sink positioned on one side of said link between couplings of said link, said heat sink including at least one heat conductive metal strip contained within the plies of said laminate and extending out therefrom to form a heat conductive path.

4,325,531

APPARATUS FOR REMOVABLY SECURING A CONTAINER TO A CARRIER RACK

Bruce D. Omholt, 2117 Richmond, N.W., Grand Rapids, Mich. 49504

Filed Feb. 11, 1980, Ser. No. 120,672
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—553 **3 Claims**



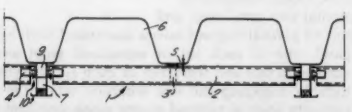
1. Apparatus for removably securing a container having a bottom to a vehicle rack comprising: a plate; plate mounting means for securing said plate to the bottom of said container; a locator pin secured to said plate; feet means on said plate having an enlarged distal portion and a reduced proximal portion; front mounting assembly means including means adapted to be secured to the forward portion of said rack; rear mounting assembly means including a top plate and a bottom plate adapted to be located respectively above and beneath said rack, and threaded fastener means for securing said top and bottom plates together and to the rear portion of said rack; at least one of said mounting assembly means defining slot means in register with and adapted to receive associated feet means on said plate; said top plate including a locator slot adapted to receive the locator pin on said plate when said container is moved rearwardly such that said feet means are in securing relation with associated slot means; and latch means for latching said plate to one of said mounting assembly means when said reduced portions of said feet means are received in associated reduced portions of said slot means, said enlarged portions of said feet means preventing said plate from being removed vertically, and said latch means including a latch member having a latch portion engaging said locator pin when the same is received in the locator slot of said top plate of said rear mounting assembly means, for maintaining said locator pin in said locator slot to prevent lateral motion of said container relative to said rack and preventing said feet means for being dislodged from said slot means.

4,325,532

FORMWORK SYSTEM

Wilhelm W. A. O. Blank, Nettetal, Fed. Rep. of Germany, assignor to SGB Group Limited, Surrey, England

Filed Jul. 9, 1980, Ser. No. 167,375
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928480; United Kingdom, Feb. 18, 1980, 05417/80
Int. Cl.³ E04G *11/48, 11/50, 17/16*
U.S. Cl. 249—26 **10 Claims**



1. A support assembly for a concrete form comprising support frames having bracket means mounted at each end

engaging longitudinal support members disposed generally transversely of said support frames,

said bracket means being located such that the level of the uppermost surface of the support frames relative to the uppermost surface of the longitudinal support members can be adjusted by inverting either the support frame or the longitudinal support members,

each of said support frames having plural substantially parallel spaced beams connected by means including said bracket means, and

each said bracket means having at least one recess on each of two opposite sides for engaging a cooperating element on said longitudinal support members in one of at least two different relative positions.

4,325,533

HOUSING DEVICE FOR ISOLATING CONNECTING REINFORCEMENTS AT JOINTS BETWEEN FIRST AND SUBSEQUENTLY POURED CONCRETE STRUCTURES

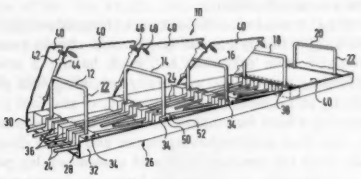
Lothar Tiletschke, and Hellmuth Feldmann, both of Bielefeld, Fed. Rep. of Germany, assignors to Sigma Bauelemente GmbH, Bielefeld, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,618

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934189

Int. Cl.³ E04C *1/00*; E04B *1/41*

U.S. Cl. 249—188 **16 Claims**



1. In a device for housing steel reinforcements in areas where joints are made between first and subsequently poured concrete structures and having an elongated, essentially box-shaped for isolating connecting portions of the steel reinforcements having anchoring portions during pouring of the first concrete structure, the improvement comprising a housing having an open box, a cover therefore, and anchoring strips disposed in the transverse direction of the box at intervals along its length and at the bottom thereof, said anchoring strips having transverse slots in the upper portion thereof to receive and support the connecting portions of the steel reinforcements, and said cover being capable of being locked to said box and passing the anchoring portions therethrough.

4,325,534

MANUALLY OPERATED BLOWOUT PREVENTER AND HYDRAULIC OPERATOR THEREFOR

James T. Roark, and Steven R. Hayter, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 962,806, Nov. 21, 1978, abandoned. This application Oct. 10, 1980, Ser. No. 195,995

Int. Cl.³ E21B *33/06*

U.S. Cl. 251—1 A **5 Claims**

1. A blowout preventer comprising

a body having a bore therethrough and guideways intersecting said bore from opposite sides thereof,

a ram positioned in each of said guideways,

means closing the outer end of each of said guideways,

an operating stem having flats on its outer end, being connected to each of said rams at its inner end and threadedly engaging with and extending through said closing means whereby rotation of said stem in one direction moves the stem and its ram toward closed position in said bore and rotation of said stem in the opposite direction retracts the stem and said ram in its guideway away from its closed position,

a hydraulic motor having a shaft and a housing,

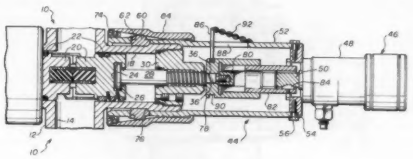
means for operatively connecting the shaft of said motor to said operating stem for rotating said stem as it moves axially,

means for quickly connecting said housing of said motor to said body while said blowout preventer is under pressure, and

means for supplying hydraulic fluid to said motor to selectively rotate said shaft and said stem in both directions,

said means for connecting said housing of said motor to said body including

a plurality of latch dogs,



a plurality of recesses in the exterior of said body surrounding the exterior of each of said guideways,

a cylinder having windows in which said latch dogs are positioned,

resilient means positioned between said latch dogs and said cylinder urging said latch dogs away from said recesses, and

means for securing one end of said cylinder to the motor housing,

a sleeve threadedly connecting to said cylinder,

said sleeve having an inner cam surface engaging the exterior of said latch dogs whereby as said sleeve is moved in one direction on said cylinder, it moves said latch dogs into said recesses to connect the motor housing to said body.

4,325,535

ACTUATOR MECHANISM FOR A ROTARY VALVE OR THE LIKE

Stephen R. Foster, New Orleans, La., assignor to Baker CAC, Inc., Belle Chasse, La.

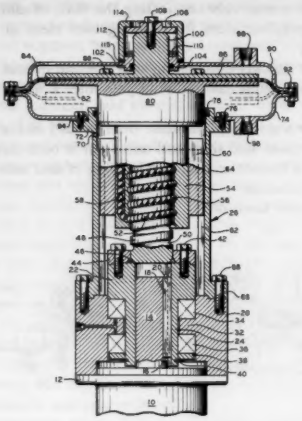
Filed Mar. 26, 1980, Ser. No. 134,391

Int. Cl.³ F16K *31/126*

U.S. Cl. 251—58 **1 Claim**

1. An actuator mechanism for a rotary valve comprising: means providing a diaphragm receiving chamber; a reciprocable diaphragm within said chamber; pressure fluid intake means on each side of said diaphragm for actuating said diaphragm in one direction or the other; means for limiting the reciprocal movement of said diaphragm comprising independent externally adjustable means on one side of said diaphragm to limit its movement in each direction; an elongate driving member having a head secured to said diaphragm for reciprocal movement therewith; a housing secured at one end to said chamber means; key means between said driving member and said housing for restricting movement of said driving member to linear reciprocal movement; a driven ball screw shaft rotatable within said reciprocal driving member; a continuous ball nut screw between said shaft and driving member and including opposing helical grooves in the shaft and driving member and a ball passage in said driving member connecting opposite ends of said grooves; a rotatable sleeve rigidly secured to the end of said driven ball screw shaft and adapted to receive the stem of the rotary valve to impart rotary movement thereto; and thrust bearings between said rotatable sleeve and said housing for receiving the thrust in opposite directions whereby

reciprocal movement of said diaphragm in either direction will effect rotary movement of said valve within predetermined



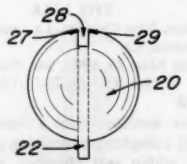
limits according to the adjustment of said reciprocal movement limiting means of said diaphragm.

4,325,536

BUTTERFLY VALVE WITH SELF LOCKING DISC

Arthur E. Garrett, Rte. 10, P.O. Box 204, Caldwell, Id.

Filed Jun. 8, 1981, Ser. No. 271,511
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—308 **4 Claims**



1. A butterfly valve comprising:

a tubular housing having a pair of oppositely disposed apertures;

a shaft provided with a longitudinal slot opening at one end of said shaft and extending a preselected length to define a closed end of said shaft; said shaft further provided with a pair of oppositely disposed grooves continuous with and in alignment with the slot; said shaft adapted for placement through the apertures of said housing; and

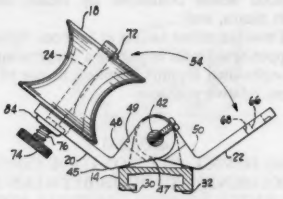
a disc having a slot contact portion adapted for slidable reception in the slot of said shaft; said disc having a notch of predetermined length on one end, the notch defining a pair of ears; and said disc having a tab projecting a predetermined length on an opposing end, the ears operable to slidingly engage respective grooves of said shaft and said tab adapted to engage the interior walls defined by the slot of said shaft and to be held in alignment therewith.

4,325,537

SNATCH BLOCK

Robert A. Winter, and David J. Steger, both of Mentor, Ohio, assignors to Merriman Holbrook, Inc., Grand River, Ohio

Filed Nov. 8, 1979, Ser. No. 92,576
Int. Cl.³ B66D *1/36*
U.S. Cl. 254—405 **6 Claims**



1. A snatch block particularly suitable for marine use comprising:

(a) an elongated base body having a longitudinal axis and having on the underside thereof underturned oppositely inwardly directed flanges disposed parallel to said axis and adapted to slidably engage a track, and a pair of axially spaced upstanding shoulders on the upper side thereof;

(b) a longitudinally extending pin carried by and extending between said shoulders;

(c) first and second spaced side cheeks hingedly mounted on said longitudinally extending pin, said cheeks extending upwardly from said base and each having a normally upstanding portion and a laterally extending foot portion defining an L-shape, the free extremity of said foot portion including a bore for rotably mounting said cheeks on said pin, said foot portion having upper and lower diverging walls from the juncture with said upstanding leg portion to accommodate said bore, the lower diverging wall coacting with said base body when said cheek is rotated outwardly to limit its rotation about said pin to hold said cheeks, respectively, in an open, flared position, and each of said cheeks having a bore extending through the upstanding leg portion;

(d) a sheave pin extending between said side cheeks and through said bore through each upstanding leg portion when said cheeks are in the normally closed position, said sheave pin being mounted on said first side cheek for limited axial movement with respect thereto, and having an extremity thereof projecting beyond the outside surface of said second cheek;

(e) means located on said projecting extremity for selectivity manually rotating said sheave pin;

(f) means coacting between the second cheek and said sheave pin for selectively locking and unlocking said second cheek in its normally upright position; and

(g) a sheave rotatably mounted on said sheave pin.

4,325,538

SMELTING FURNACE FOR DIRECT OBTAINING OF COPPER FROM ORE CONCENTRATES/AND COPPER ORES

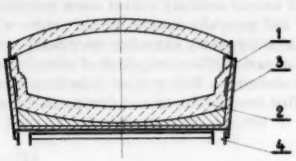
Wlodzimierz Wozniczko; Adam Lukasik; Jozef Marczynski, all of Katowice; Witold Kowal, Glogow; Edward Plaskacewicz, Bytom; Slawomir Pasierb, Chorzow, and Norbert Langner, Katowice, all of Poland, assignors to Biuro Projektow Przemyslu Metali Niezelaznych "Bipromet", Katowice, Poland

Filed Dec. 27, 1979, Ser. No. 107,680
Int. Cl.³ F27B *3/24*; C21B *15/04*
U.S. Cl. 266—190 **6 Claims**

1. A furnace for directly obtaining copper during smelting from ore concentrates and/or copper ore which comprises:

a hearth lining having an integral bottom and side wall formed of first, second and third layers of materials each

having a good heat conductivity with each layer having a different resistance to heat transfer through the layer and a good resistance against any destructive action of copper and slag during a smelting process;



a metal jacket surrounding said hearth, said metal jacket including channels through which a coolant may flow;

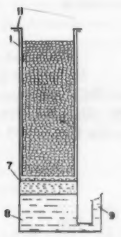
said layers being adjacent each other with said third layer closest said metal jacket.

4,325,539

DEVICE FOR TREATING A MOLTEN METAL OR ALLOY USING LIQUID AND SOLID FLUX

Jean-Marie Hicter, Coublevie-Voiron, and Pierre Guerit, Chambery, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 61,023, Jul. 26, 1979, Pat. No. 4,295,884. This application Feb. 19, 1980, Ser. No. 122,520
Claims priority, application France, Jul. 31, 1978, 78 23197
Int. Cl.³ C22B 9/02
U.S. Cl. 266—207 **7 Claims**



1. A device for the treatment of a molten metal by means of solid and liquid metal halide-based flux, comprising:

a vertical column having an upper inlet end and a lower outlet end and containing a complex treatment bed comprising a packing of granules, at least in part comprising solid flux, immersed in a bath of liquid flux, the melting point of the solid flux being higher than the melting temperature of the liquid flux and the temperature of the metal which is to be treated;

means supporting said complex bed upstream of the column outlet end for providing a molten metal droplet coalescene zone therebeneath;

means provided at the upper end of the column for introducing molten metal to be treated into the column;

a molten metal extraction siphon in communication with the outlet end below said support means; and

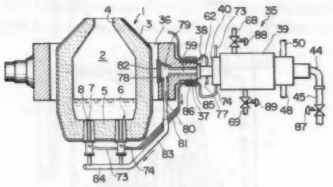
said siphon having a cross-section smaller than that of the cross-section of the column, said siphon having an outlet orifice intermediate the lower and upper ends of the complex bed, said positioning of said siphon outlet having a difference of level relative to the level of the inlet of the column whereby the volumetric capacity of the siphon is at least equal to the volumetric loss of charge undergone by the molten metal as it passes through the column.

4,325,540

APPARATUS FOR SUPPLYING FLUIDS TO A CONVERTER

Masahiko Seki, and Yukito Io, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,597
Claims priority, application Japan, Nov. 10, 1979, 54-144949
Int. Cl.³ C21C 5/42
U.S. Cl. 266—243 **15 Claims**



1. A fluids supply apparatus for a converter having a plurality of tuyeres at the bottom thereof and supported by a tiltable trunnion ring having an axially projecting trunnion shaft, each tuyere having a refining gas injection nozzle and an annular protective gas injection nozzle coaxially extending around the refining gas injection nozzle, said supplying apparatus comprising:

a rotary joint having a non-rotatable casing member and a rotary assembly coupled to the trunnion shaft;

said rotary assembly having a cylindrical member axially extending within said casing member and sealingly and rotatably positioned with respect thereto;

a refining gas supply conduit having one end connected to the tuyeres for supplying refining gas to the refining gas injection nozzles thereof and having the other end connected to said rotary assembly;

a plurality of protective gas supply conduits, each having one end respectively connected to one tuyere for supply protective gas to the protective gas injection nozzle thereof and having the other end connected to said rotary assembly;

said rotary assembly having a plurality of passageways, each respectively communicating with one of said protective gas supply conduits;

said members having a groove and port communication means for respectively communicating said passageways with the outside surface of said casing member;

a plurality of protective gas supply pipes, each respectively connected to the outside surface of said casing member and communicating with said groove and port communication means for respectively supplying protective gas to one of said passageways;

a refining gas supply pipe connected to said casing member; and

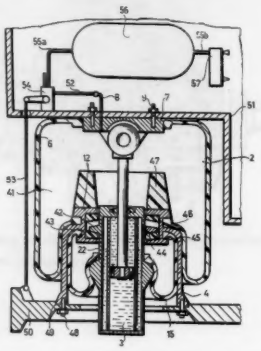
said casing member and said rotary assembly having a channel communication means for communicating said refining gas supply conduit with said refining gas supply pipe.

4,325,541

SPRING LEG WHICH HAS A LOAD PROPORTIONALLY LIMITED DAMPING, CONSISTING OF AN AIR SUSPENSION AND A TELESCOPIC SHOCK ABSORBER FOR MOTOR VEHICLE

Jozsef Korosladanyi; Sandor Szabo; Jeno Madi, all of Budapest; Laszlo Vad, Visgrad, and Otto Farkas, Budapest, all of Hungary, assignors to Autoipari Kutato Intezet and Taurus Gumiipari Vallalat, both of Budapest, Hungary

Continuation of Ser. No. 919,942, Jun. 28, 1978, abandoned.
This application Apr. 9, 1980, Ser. No. 138,495
Claims priority, application Hungary, Jun. 30, 1977, AU 337
Int. Cl.³ F16F *9/08*
U.S. Cl. 267—8 R **6 Claims**



1. In a spring leg with load proportional limited damping for use on a vehicle, including a telescoping shock absorber including a piston and cylinder and a load bearing air suspension connected to a gas pressure system and having walls surrounding the air space thereof comprising two rigid walls fixed to the body and the axle of the vehicle and an elastic jacket connected to the two rigid walls, the improvement comprising means mounting the cylinder for movement relative to one of the two rigid walls comprising an auxiliary diaphragm having an inner rim fixed to the cylinder of the shock absorber and an outer rim fixed to said one of the two rigid walls of the air suspension to define the auxiliary diaphragm as one of the bordering walls of the air space of the air suspension, means for limiting the outward movement of the cylinder of the shock absorber from the air space of the air suspension, the limiting means comprising a pilot bushing fixed to the one rigid wall bearing the outer rim of the auxiliary diaphragm and wherein the piston rod of the shock absorber is fixed to the other rigid wall of the air suspension, wherein both the elastic jacket of the air spring and the auxiliary diaphragm comprise rolling diaphragms and the one rigid wall has fixing elements connected to the axle and a stop collar for the shock absorber and wherein the outer rim of the auxiliary diaphragm is sealingly fixed to the one rigid wall of the air suspension and in which there is a slot bearing elastic stopping rings which encircle the stop collar of the shock absorber and limit the displacement of the shock absorber cylinder and wherein the shock absorber cylinder has a rim including a channel which connects the air spaces divided by the rim of the air suspension cylinder.

4,325,542

SEAT CONSTRUCTION

Stephen E. Muzzell, Ferndale, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Aug. 1, 1980, Ser. No. 174,643
Int. Cl.³ F16F *3/02*
U.S. Cl. 267—85 **9 Claims**

5. For use in a seat construction,

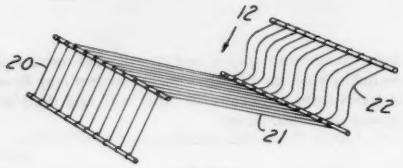
a seat suspension mat comprising covered first and second coated border wires and a plurality of longitudinally spaced transversely extending spaced wires having their ends attached to said border wires,

said first border wire being adapted to be attached to a first rail of a frame and said second border wire being adapted to be attached to a second rail of a frame,

first and second auxiliary coated wires extending longitudinally and generally parallel to said border wires,

each said transversely extending wire being wound around each of said auxiliary longitudinal wires,

thereby defining a first portion extending upwardly from said first border wire to said first auxiliary wire,



a second portion extending from said first auxiliary wire to said second auxiliary wire,

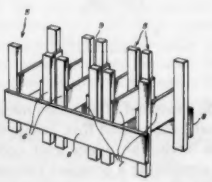
and a sinuous portion extending from said second auxiliary wire to said second border wire such that when a load is applied generally perpendicular to the general plane of the suspension mat, the wrapped portions of the wire about the auxiliary longitudinal wires are wound to varying degrees about the auxiliary longitudinal wires and the sinusoidal portions of the wires extend to provide continued resilient suspension.

4,325,543

SAW BUCK

Floyd R. York, North Rd., Yarmouth, Me. 04096

Filed Jun. 23, 1980, Ser. No. 161,697
Int. Cl.³ B23Q *3/00*
U.S. Cl. 269—295 **5 Claims**



1. A wooden saw buck said saw buck including a series of H-shaped holders for use in sawing with a chain saw lengths of logs, split sections of logs or limbs, each holder consisting of a pair of straight uprights and a straight transverse supporting member connected approximately at right angles to said upright, the lower ends of said uprights the legs of the saw buck and their upper ends confining wood lengths when supported by said transverse members, and connecting members, one for each of the corresponding uprights of the supports and connected thereto below the upper edges of said transverse members and above the lower ends of said uprights and spacing said supports from each other in a manner depending on the wanted lengths into which said wood lengths are to be cut and the number of cuts necessary for such wanted lengths, said spacing such that for each cut that is to be made there is a pair of holders so closely spaced as to establish transversely aligned slots of a width such as to freely receive the chain and bar of a chain saw, with the upper edges of said connecting members below the upper edges of the transverse members, the distance

between the upper edges of the transverse supporting members and of the connecting members such that the connecting members are so far below wood lengths held in the saw buck that the user of the chain saw can readily control the use thereof to prevent contact of the chain with either connecting member.

4,325,544

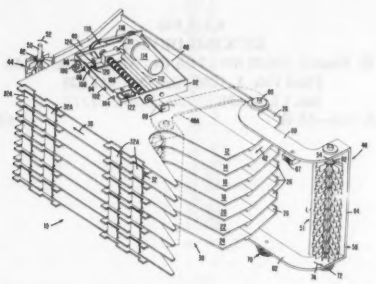
COLLATOR WITH ADJUSTABLE SHEET ALIGNER

Robert Magno; Donald C. Roller, both of Boulder, and Allan J. Rood, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1980, Ser. No. 146,948

Int. Cl.³ B65H *31/38, 31/24*

U.S. Cl. 271—221 **8 Claims**



4. In a sheet accumulating device such as a collator having at least one horizontally disposed bin and means for aligning sheets entering the bin, the improvement comprising:

a fixed and a movable position drive roller disposed in a vertical orientation and adjacent opposite sides of the bin;

each drive roller having a plurality of flaps thereon, said flaps being operable to contact the sheets on the edge and top surface to allow alignment of undersized sheets;

an adjustment device operable to adjust the position of the movable position roller to enable the bin to accommodate variable size sheets; and

a locking device operable to lock the movable position roller following its adjustment.

4,325,545

METHOD AND APPARATUS FOR ALIGNING STACKED PAPER SHEETS OR THE LIKE

Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstrucktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,634

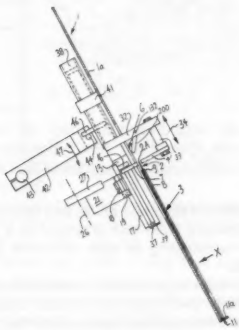
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950616

Int. Cl.³ B65H *31/34*

U.S. Cl. 271—221 **34 Claims**

1. A method of aligning the sheets of a stack which includes aligned and misaligned relatively small first sheets and at least one relatively large second sheet having a first marginal portion extending beyond the corresponding first marginal portions of the first sheets, wherein the first marginal portions of misaligned first sheets extend beyond the first marginal portions of aligned first sheets, and wherein the sheets have second marginal portions located opposite the respective first marginal portions and the second marginal portions of aligned first sheets extend beyond the second marginal portions of misaligned first sheets, comprising the steps of locating one side of the stack against a first surface; placing the second marginal portions of aligned first sheets against a second surface which is inclined with reference to the first surface whereby the first marginal portions of the misaligned first sheets extend beyond the first marginal portions of first sheets whose second marginal portions contact the second surface; deforming the first marginal portion of the second sheet so as to move at least one section of the thus deformed first marginal portion of the second sheet away from the neighboring section of the first marginal portion of the nearest first sheet, at least at one side of the second sheet; and shifting the misaligned first sheets with reference to the aligned first sheets to move the second marginal portions of misaligned first sheets into contact with the second surface, including applying against the first marginal portions of misaligned first sheets a force acting in a direction toward the second surface in the region of said section of the first marginal portion of said nearest first sheet.

9. Apparatus for aligning the sheets of a stack which includes aligned and misaligned relatively small first sheets and at least one relatively large second sheet having a first marginal portion extending beyond the corresponding first marginal portions of the first sheets, wherein the first marginal portions of misaligned first sheets extend beyond the first marginal portions of aligned first sheets, and wherein the sheets have second



marginal portions located opposite the respective first marginal portions and the second marginal portions of aligned first sheets extend beyond the second marginal portions of misaligned first sheets, comprising locating means having a first surface arranged to contact one side of the stack to be treated in said apparatus and a second surface which is inclined with reference to said first surface and is arranged to contact the second marginal portions of aligned first sheets; abutment means; means for shifting said abutment means from a first end position, against the first marginal portions of misaligned first sheets, and toward said second surface on to a second end position to thereby move the second marginal portions of misaligned first sheets into contact with said second surface; and means for moving said abutment means into deforming engagement with the first marginal portion of the second sheet in the stack one side of which contacts said first surface before said shifting means moves said abutment means againt the first marginal portions of misaligned first sheets.

4,325,546

MODULAR ATHLETIC PLAYING SURFACE WITH TUNED COMPLIANCE

Thomas A. McMahon, 65 Crest Rd., Wellesley, Mass. 02181, and Peter R. Greene, 77 Lanark Rd., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 947,101, Sep. 29, 1978, which is a continuation-in-part of Ser. No. 826,335, Aug. 22, 1977, abandoned. This application Jan. 9, 1980, Ser. No. 110,671

Int. Cl.³ A63C *19/00*

U.S. Cl. 272—3 **25 Claims**

1. An athletic playing surface that receives impacts on its upper surface comprises an array of modules in side by side, closely spaced relationship, each of said modules comprising an upper plate and a lower plate, said plates being stiffly

resilient and in a generally parallel, spaced apart relationship,

spacer means coupled between said upper and lower plates in a face abutting relationship, the abutting faces of said spacer means having an area that is substantially smaller than that of either of said plates, said spacer means having a flexural stiffness at least roughly comparable to the flexural stiffness of said plates, and

a plurality of resilient members disposed between said upper and lower plates, said resilient members being substantially more resilient than said plates and spacer means, and spaced horizontally from and arranged in a pattern substantially circumscribing at least two sides of each said spacer means,

said module having a large vertical compliance and presenting a low effective vertical mass to said impacts, and

said spacer means and resilient members having their dimensions and their locations with respect to said plates selected to provide a compliance response to said impact that is substantially uniform over said upper plate and substantially independent of the area of the impact.

4,325,547

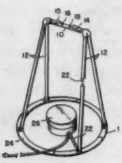
BACK STRENGTHENING DEVICE

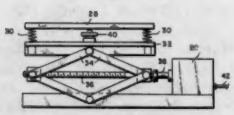
Russell P. Cook, 58 Boulder Rd., Wellesley, Mass. 02181

Filed Mar. 17, 1980, Ser. No. 130,869

Int. Cl.[3] A63B *23/02*

U.S. Cl. 272—144 **7 Claims**





1. A back strengthening apparatus comprising:

a. support means to support the upper body of a patient;

b. a foot platform associated with said support means;

c. means resiliently supporting said foot platform for selectively lowering said foot platform, said supporting means for sensing a predetermined amount of the patient's weight on said platform and adapted to regulate the extent said platform is lowered in response to the weight of the patient on said platform;

d. actuating means on said support means operatively connected with said platform supporting means for selectively lowering said platform; said actuating means being actuated by being grasped by the patient; whereby, when the patient is supported by said support means with a predetermined amount of the patient's weight supported by said platform and sensed by said sensing means, said actuating means is actuated by the patient causing said platform supporting means to lower said platform wherein said actuating means is adapted to regulate the extent the platform is lowered.

4,325,548

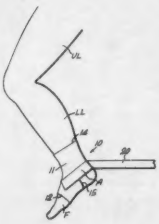
KICKING DEVICE

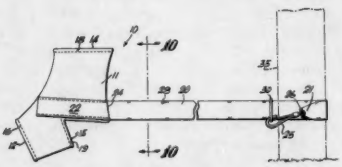
Silvio D. Piccini, 13620 SW. 74th Ct., Miami, Fla. 33158

Filed Feb. 1, 1980, Ser. No. 117,538

Int. Cl.[3] A63B *69/00, 23/04, 21/12*

U.S. Cl. 273—55 B **2 Claims**





1. An apparatus for improving the skills and strength of a kicker comprising,

an elastic sock-like band to engage the kicking foot and ankle of said kicker, said band having portions cut out to expose the toes and heel of said foot and ankle,

an elastomeric strap between 1 inch and 2 inches wide, one end portion of said strap sewn to said band so that said strap joins said band in the area covering the Achilles heel of said foot and ankle, and the other end of said strap containing securing means,

said strap having a length and stiffness selected so that when said band is engaged by said foot and ankle and when said strap is anchored by employing said securing means to a fixed object in a spaced relationship to said kicker, said kicker can move his kicking foot and ankle through his complete and normal kicking motion while under the restraining force of the stretching of said strap and thereby exercise the muscles that are involved in said kicking motion,

said securing means comprising a swivel clip attached to the remote end of said strap together with a ring, slideably surrounding said other other end of said strap, for engagement with said clip, whereby said other end of said strap may be wrapped around a fixed object and said clip engaged with said ring so as to secure said strap to a fixed object.

4,325,549
TENNIS RACKET WITH SELECTIVELY MOVABLE WEIGHT

Joseph P. Vasselli, 112 Battle Hill Ave., Springfield, N.J. 07081

Filed Mar. 10, 1980, Ser. No. 128,890
Int. Cl.[3] A63B 49/04
U.S. Cl. 273—73 R 3 Claims

1. An improved tennis racket having a weight which is selectively movable toward and to the head of the racket to increase a force for driving and/or returning a ball, said tennis racket including:

(a) a head portion including stretched strings supported and secured thereto;

(b) a throat portion, adjacent said head portion, merging into a handle portion, said handle portion terminating in a handle;

(c) a tubular passageway extending substantially centrally of said throat portion, said handle portion and said handle;

(d) a weight located in said tubular passageway, said weight being normally freely slidable throughout said tubular passageway and with each end of said tubular passageway having a closure to limit the travel of said weight;

(e) vent means operatively associated with said tubular passageway to prevent air cushioning and slowing of the movement of the weight in said tubular passageway; and

(f) weight stop means located adjacent the upper end of said handle and being exposed on the outer surface of said handle portion for selective engagement by the racket user, said stop means being normally out of engagement with said weight so as to permit said weight to be freely slidable in said passageway, said stop means including means for engaging said weight within said passageway upon the user pressing inwardly on said stop means so as to temporarily restrict movement of said weight.

4,325,550
PUTTER WITH SHAFT AXIS FOCUSSED AT BLADE KEEL

Stanley C. Thompson, Playa del Rey, and Glenn H. Schmidt, Glendale, both of Calif., assignors to Stan Thompson Golf Club Company, Culver City, Calif.

Filed Aug. 1, 1980, Ser. No. 174,625
Int. Cl.[3] A63B 53/04
U.S. Cl. 273—80 C 5 Claims

1. In a golf putter, the combination comprising

(a) a generally and laterally elongated head having a ball striking front face, a heel and a toe,

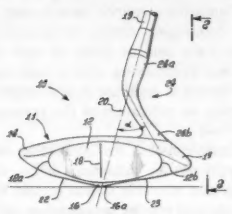
(b) the head having an integral and downwardly projecting keel at the underside thereof, the keel located intermediate the toe and heel and extending in a rearward direction relative to the front face, and

(c) an elongated generally upright shaft having an axis, the shaft connected to said head,

(d) the shaft axis directed to intersect the keel,

(e) and a hosel interconnecting the shaft and head, the hosel having an upper portion extending in the direction of said axis, and a lower portion extending at a substantial angle to said axis and spaced therefrom to join the head near said heel,

(f) said keel including a lowermost portion which is locally downwardly convex and located directly beneath the



center of the front face, said front face being angled slightly upwardly and rearwardly relative to vertical when the keel lowermost portion is flatly engageable with the green turf,

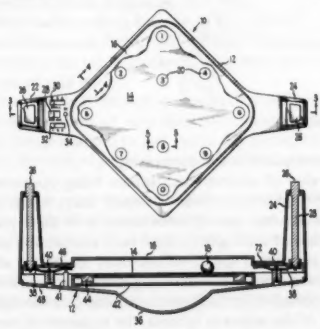
(g) said axis angled in relation to said head to pass in spaced relation to said face center and to intersect the lowermost extent of said keel, and the remainder of the head being located above the level of said keel lowermost portion, whereby the keel lowermost portion intersected by said axis is the only portion of the head engageable with the turf during stroking of a ball on a green,

(h) the underside of the head being downwardly concave at opposite sides of the keel.

4,325,551
ELECTRONICALLY CONTROLLED GAME APPARATUS WITH PLAYING ARRAY POSITIONS ACTUATABLE BY A PLAYER CONTROLLED MOVABLE OBJECT

Ralph J. Kulesza, Chicago; Jeffrey D. Breslow, Highland Park; Howard J. Morrison, Deerfield; Gunars Licitis, Jr., Lombard, and Rex M. Harper, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,752
Int. Cl.[3] A63F 7/38
U.S. Cl. 273—110 16 Claims



1. Game apparatus comprising:

a housing defining a playing surface and including means for selectively altering the orientation of said playing surface;

a movable object disposed and being movable on said playing surface in response to the orientation of said playing surface;

a plurality of playing field array positions defined on said playing surface, each of said playing field array positions comprising means responsive to said movable object for sensing the presence or absence of said movable object and providing an output indicative thereof, each of said playing field array positions further comprising illumination source means for illuminating a respective one of said playing field array positions;

electronic control means responsive to said outputs of said sensing means and controlling the illumination state of said illumination source means, said electronic control means comprising means for selectively actuating on a random basis one or more of said illumination source means and deactuating each of said actuated illumination source means in response to said respective sensing means outputting an indication of the presence of said movable object; and

player actuable means for contacting said movable object and applying an actuating force directly downward through said movable object to said field array positions to actuate said sensing means when said movable object is directly over one of said array positions and said player actuable contacting means is operated, said player actuable contacting means comprising a movable, transparent cover disposed generally parallel to the plane of said playing surface and a manually actuable player actuator control for moving said cover between a raised position and a lowered movable object contacting position.

4,325,552

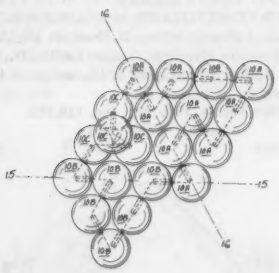
MANIPULATIVE TOY

Michael O. Glasheen, Lot 6, Lower Colo Rd., Lower Portland, New South Wales, 2756, Australia

Filed Mar. 31, 1980, Ser. No. 135,336

Int. Cl.[3] A63F *9/08*; G09B *23/04*

U.S. Cl. 273—153 P **4 Claims**



1. A manipulative toy comprising:

a plurality of spheres, each sphere being connected to two other spheres to form a closed loop, each connection between any two spheres being at a fixed point at the surface of each sphere, each such connection maintaining the connected sphere substantially in contact at the point of connection while allowing relative rotation of adjacent connected spheres about a common axis through the centers of the adjacent spheres, the sequence of the angles of intersection of the connection axes of successive spheres being chosen such that the spheres may be manipulated, by relative rotation of successive spheres into a polyhedron.

4,325,553

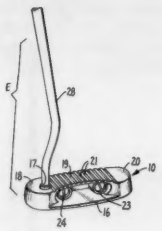
LOW ANGULAR ACCELERATION PUTTER AND METHOD

Dale W. W. Taylor, P.O. Box 245, Carmel Valley, Calif. 93924

Continuation-in-part of Ser. No. 873,109, Jan. 30, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,436

Int. Cl.[3] A63B *53/04*

U.S. Cl. 273—167 F **13 Claims**



1. In a method of making a putter having equalized components of effective mass so as to minimize angular acceleration imparted to the ball during the period of impact, said putter including a head and a shaft, the steps of preparing said head with a striking face, toe, heel and central portions, removing portions of the mass of material immediately behind said central portion of said head to form a rearward opening cavity, determining the effective mass of of the toe portion of said head in relation to a vertical plane extending through a point at the center of said striking face, determining the effective mass of the heel portion of said head plus that portion of the shaft extending upward from said heel portion which feels the shock waves during the period of impact of the club head with the ball, said last determination also being in relation to said vertical plane extending through said point at the center of the striking face, removing material from the heel portion of said head so that the effective mass of said heel portion plus said shaft portion equals the effective mass of said toe portion to thereby balance the effective mass components on either side of said vertical plane through said point at the center of said striking face and, also, the moments of inertia of said effective mass components with respect to said vertical plane, to thereby effectively minimize angular acceleration imparted to the ball by said putter throughout the period of impact.

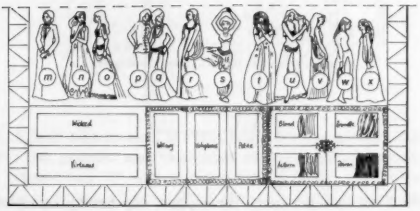
8. A golf putter having a shaft and a head with a striking face, said putter being constructed to have a predetermined precisely balanced effective mass which is operable during the putting stroke, said effective mass constituting those portions of the head and shaft of the putter within which shock waves are felt during an impact period related to the putting stroke which commences with contact of the ball with the striking face and extends until the ball leaves the striking face, said putter being particularly constructed to provide balanced components of said effective mass with respect to a vertical plane extending through a point in the center of said striking face and which bisects said face, said balanced components of said effective mass consisting of a first effective mass component toeward of the plane vertically bisecting the face and of a second effective mass component heelward of said plane bisecting said face, said second effective mass component also including a substantial portion of the shaft less than the full length thereof within which said shock waves are felt during the impact period of said putting stroke, said balanced components of the effective mass including club head portions which are of unequal mass in that the mass of the toeward portion of the head is greater than the mass of the heelward portion of the head, the greater mass of said toeward portion being balanced as part of said effective mass during the impact period of the putting stroke by the mass of that portion of the shaft which feels the shock waves during said impact period, whereby the

moments of inertia of said first and second effective mass components are at all times equal and balanced about said point at the center of the striking face during the impact period of said putting stroke.

4,325,554
GAME WITH BOARD AND TOKENS

James C. Broom, The Hermitage, Burtenshaw Rd., Thames Ditton, Surrey, England

Division of Ser. No. 958,412, Nov. 7, 1978, Pat. No. 4,272,081.
This application Feb. 26, 1981, Ser. No. 238,580
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—274 **3 Claims**



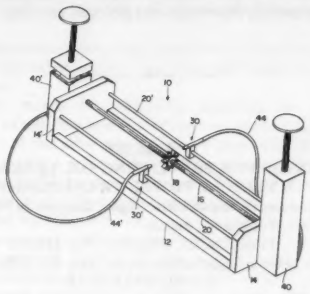
1. Game equipment comprising a set of 24 cards and a game board, each card in the set depicting a different girl in a Sultan's harem and, being unique with regard to its selection of one of each of three different attributes of the girls, a first attribute of which there are two alternatives, a second attribute of which there are three alternatives and a third attribute of which there are four alternatives, the game board reproducing the 24 girls depicted on the cards and also including separate areas marked to represent the different alternatives of the nine attributes found in the set of cards.

4,325,555
GAME USING AIR BLOWERS TO MOVE OBJECT

Douglas S. Marling, 2511 Elizabeth St., Janesville, Wis. 53545

Filed Apr. 17, 1980, Ser. No. 141,208
Int. Cl.[3] A63F *9/02*
U.S. Cl. 273—355 **5 Claims**

1. A game apparatus comprising:
a source of pressurized air;
a pair of air blowers disposed in opposed relationship to each other and each having nozzles for projecting pressurized air in a jet;
means for connecting said source of pressurized air with said pair of air blowers;
an object located between said air blowers and movable responsive to a jet of air projected thereon from said air blowers;
means for guiding and constraining the movement of said object so as to be equidistant from and in front of said pair of air blowers; and
a pair of substantially rigid elongate guide means for mounting respective ones of said pair of air blowers so that said pair of air blowers are freely movable therealong and pivotable only in a plane perpendicular to the longitudinal axis of a respective guide means and for guiding the movement of said air blowers such that the air blowers are

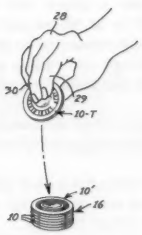


constrained to move along said guide means and are positionable directly in front of said object as said object moves.

4,325,556
PLAYING DISC

Joseph F. DeCanto, and Deborah L. Griffey, both of 141 Neese Dr., E-30, Nashville, Tenn. 37211

Filed Jul. 14, 1980, Ser. No. 167,934
Int. Cl.[3] A63F *9/02*
U.S. Cl. 273—393 **2 Claims**



1. A playing disc adapted to be stacked with other like discs for playing a game in which another like playing disc is thrown at the stack, comprising:
(a) a solid disc body of homogenous thermoplastic material having parallel top and bottom faces, a circular edge, and a generally uniform thickness,
(b) said bottom face being continuously coplanar,
(c) a central depressed area in said top face defining a bottom wall portion having a thickness less than said uniform thickness of said body,
(d) said bottom wall portion being more flexible than the remaining portions of said disc body, said bottom wall portion being adapted to flex under the impact of a playing disc thrown edge-wise against said bottom wall portion,
(e) said top face comprising an annular, continuously coplanar, rim, adjacent said edge, no portion of said body projecting from said top face beyond the plane of said annular rim,
(f) a plurality of circumferentially spaced recesses in said top face between said central depressed area and said annular rim,
(g) an annular wall of said uniform thickness separating said recesses and said central depressed area, the top of said annular wall being coplanar with said rim, whereby the top of said annular wall and said coplanar rim are adapted

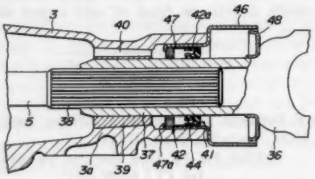
to seat flush against the bottom face of an adjacent upper stacked playing disc to form air pockets between the bottom face of an adjacent upper stacked playing disc and said central depressed area and said recesses.

4,325,557

APPARATUS FOR PREVENTING OIL LEAKAGE FROM A VEHICLE POWER TRANSMISSION

Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 29, 1980, Ser. No. 116,637
Claims priority, application Japan, Jan. 30, 1979, 54-9863
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—65 **3 Claims**



1. In a vehicle power transmission having one end of a sleeve yoke protruding into a casing, said sleeve yoke end being rotatably supported by an oil-lubricated bearing contained by said casing and being connected to an axially aligned output shaft extending through said casing, apparatus for preventing oil leakage between said casing and said sleeve yoke end comprising:

a non-rotatable dust cover surrounding said sleeve yoke end, said dust cover having a cylindrical protrusion received in said casing,

a flexible oil seal arranged within said cylindrical protrusion to surround and sealingly engage said sleeve yoke end on the outer side of said bearing,

a baffle plate having a ring-shaped portion arranged within said cylindrical protrusion to surround said sleeve yoke end between and in an axially opposed position relative to both said oil seal and said bearing,

said dust cover, oil seal and baffle plate being fixedly interconnected for attachment to said casing as an integral unit.

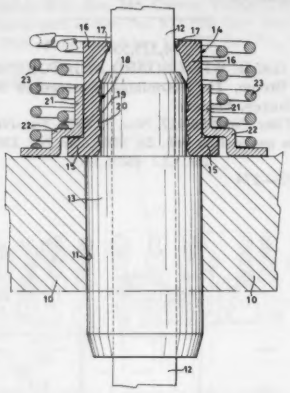
4,325,558

ASSEMBLY CONSISTING OF A SEAL GASKET FOR VALVE STEMS AND A SPRING SUPPORT CAP

Mario Poggio, Leini, Italy, assignor to SAIAG S.p.A., Cirie, Italy

Filed Apr. 10, 1980, Ser. No. 138,844
Claims priority, application Italy, May 7, 1979, 67950 A/79
Int. Cl.³ F16J *15/00*
U.S. Cl. 277—189 **5 Claims**

1. In combination with the cylinder head of an internal combustion engine having a valve and valve guide extending through the head and a coil compression spring acting between the valve and the cylinder head, a gasket surrounding the valve guide and sealing against the valve stem, the gasket having a radially outwardly extending flange on its end adjacent the cylinder head, and a spring support cap surrounding the gasket and having an interference fit with the gasket and resting on the cylinder head, the valve spring pressing the support cap



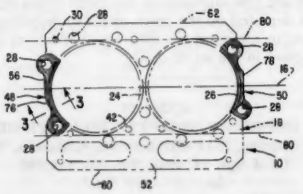
against the cylinder head, the support cap having an annular recess in which said gasket flange is disposed.

4,325,559

EROSION RESISTANT GASKET

Daniel E. Czernik, Hinsdale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed May 12, 1980, Ser. No. 149,120
Int. Cl.³ F16J *15/06*
U.S. Cl. 277—235 B **4 Claims**

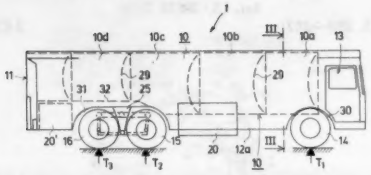


1. An abrasive-erosion resistant, elongated gasket assembly adapted to be positioned between an engine block and head, said engine defining at least two combustion chambers disposed along a longitudinal axis of said engine, said gasket comprising a main body portion including a gasket base providing a first surface and a second surface and a composite facing material on each said surfaces, said gasket assembly defining at least two combustion openings arranged in a line and a substantially uniform layer of an abrasive-erosion resistant material of from about 0.002 to 0.012 inch in thickness deposited only on a selected portion of said facing material at each of the two opposite longitudinal ends of said gasket base and within the areas bounded by lines tangential to the peripheries of the combustion openings, the sides of the combustion openings and the ends of said gasket base, thereby to resist abrasive-erosion of said gasket assembly.

4,325,560
TANK TRUCK VEHICLE FOR TRANSPORTING FLUID OR PULVEROUS MATERIAL, PARTICULARLY OIL

Reijo Hirvonen, Mähkönkatu 12 A, 81720 Lieksa 2, Finland, assignor to Hollming Oy and Reijo Hirvonen, both of, Finland

Filed Mar. 14, 1979, Ser. No. 20,412
Claims priority, application Finland, Mar. 14, 1978, 780799; Apr. 17, 1978, 781162; Mar. 1, 1979, 790707
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 D **4 Claims**



1. A land vehicle, such as a tank truck, for transporting fluid, pulverous, granular and/or chipped material and, in particular, for transporting oil, in a transporting container, said vehicle having an engine, power transmission means and front and rear wheels, comprising:

a longitudinally extending substantially tubular shell defining said transporting container having a transverse dimension at least as great as the wheel base of said vehicle, and a longitudinal dimension essentially as long as the vehicle, said shell having a structure which is sufficiently rigid such that said shell comprises both the sole means for defining said transporting container as well as the sole means for defining the supporting frame of the vehicle so that the vehicle supporting frame does not include any supporting frame structure separate from said tubular shell;

an engine and power transmission means substantially directly supported by said tubular shell beneath the same; and

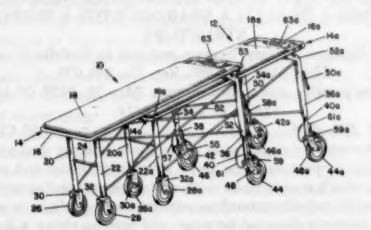
wherein said front wheels are connected to a front axle and said front axle is substantially directly supported by said tubular shell in substantial alignment with the forward end of said shell;

whereby by virtue of said vehicle being devoid of any supporting frame structure other than said tubular shell, said vehicle has a smaller overall height and lower center of gravity than conventional vehicles of this type.

4,325,561
NESTING PATIENT TRANSPORT TABLES

Gary S. Lynn, 8119 Forest Ave., Munster, Ind. 45215

Filed Mar. 17, 1980, Ser. No. 131,204
Int. Cl.³ B62D *39/00*
U.S. Cl. 280—33.99 R **20 Claims**



1. A transport table for being nested together with like transport tables for storage, comprising:

a generally planar table top having first and second opposing ends;

first leg structure extending downwardly from the first end of said table top for supporting said table top above the floor;

second leg structure extending downwardly from the second end of said table top for supporting said table top above the floor;

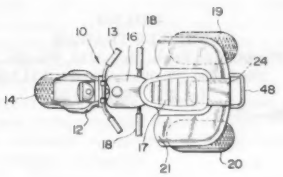
adjustment means for selectively adjusting the relative lengths of said first and second leg structures to adjust the position of the table top between a generally horizontal service position and a tilted nesting position, the second end of said table top being above the first end of said table top when in the tilted nested position; and

said second leg structure being adapted to receive said first leg structure of a like transport table when in the tilted nesting position so that the like transport table may be nested within and beneath said transport table by inserting the first end of said table top of the like table top of the like transport table through said second leg structure of said transport table.

4,325,562
THREE-WHEELED VEHICLE WITH A CONTAINER

Kozo Yamada, Asaka; Yasuhiro Ohba, Kamifukuoka, and Seiichi Matsui, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,387
Claims priority, application Japan, Jun. 11, 1979, 54-79207[U]
Int. Cl.³ B62D *61/08*; B60R *11/00*
U.S. Cl. 280—62 **7 Claims**



1. A three-wheeled vehicle, comprising:

a vehicle frame;

a front wheel rotatably mounted on said frame;

a pair of parallel rear wheels rotatably mounted on said frame;

a container disposed rearwardly of said frame between said rear wheels;

a pair of parallel spaced bars extending rearwardly from said frame, said bars supporting said container therebetween;

a U-shaped guard mounted on said bars and extending rearwardly of said container; said container being provided thereon with first and second spaced resilient means;

said bars being provided thereon with first locking means held in locking engagement with said first resilient means; and

said guard being provided thereon with second locking means held in locking engagement with said second resilient means.

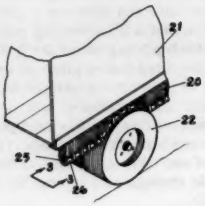
4,325,563
VEHICLE SPRAY REDUCTION

Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 12308, and James W. Winger, 5728 E. Glen Carla Dr., Huntington, W. Va. 25705

Filed May 2, 1980, Ser. No. 146,013
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **2 Claims**

1. An apparatus for collecting wet spray from the tires of

vehicle trucks operating on wet roads comprising a plurality of wiggle plates adapted to be mounted on the underside of a vehicle truck body along its lateral edge above the vehicle tires, said wiggle plate comprising a plurality of vertical plates which are mounted transversely with respect to the centerline of the vehicle axis, each of said wiggle plates having a plurality of angular bends and a vertical member secured to the plate at each bend to form a water cavity, wherein said wiggle plates



are mounted in a parallel relationship to form therebetween flow passages having a plurality of curved turns for separating the water droplets in the air flowing transversely outward from the truck centerline in the vicinity of the tires through said flow passages and collecting the water droplets at each turn in said water cavity, and a gutter mounted at the bottom of said wiggle plates for collecting water from said water cavities, said gutter having openings for discharging the collected water to the rear and side of the vehicle.

4,325,564

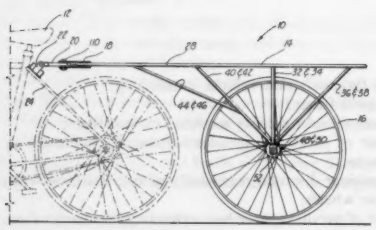
BICYCLE TRAILER

Roger N. Phipps, Star Route, Box 3215, Wasilla, Ak. 99687

Filed Mar. 27, 1980, Ser. No. 134,540

Int. Cl.³ B62D *63/08*

U.S. Cl. 280—204 **5 Claims**



1. Apparatus for trailing behind a standard bicycle having a pair of opposite rear fork members, comprising:

first and second connector means each secured to a respective one of said opposite rear fork members;

hitch assembly means consisting of bifurcated plate means having a hitch support portion and laterally spaced hitch arms;

a first bearing rod having the rod end secured to one of said hitch arms and having the bearing end vertically pivotally secured to said first connector means;

a second bearing rod having the rod end secured to the opposite hitch arm and the bearing end vertically pivotally secured to said second connector means;

elongated, horizontal frame means having forward and and rearward ends;

fork support means secured beneath said frame means;

a bicycle wheel and axle rotatably secured between said fork support means;

tongue plate means integrally formed with the forward end of said frame means; and

pin securing means for pivotally affixing said tongue plate means over said hitch assembly means hitch support portion.

4,325,565

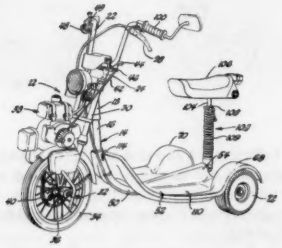
CAMBERING VEHICLE

Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1980, Ser. No. 126,877

Int. Cl.³ B62K *5/02*

U.S. Cl. 280—282 **3 Claims**



1. A cambering vehicle for transporting a vehicle operator along a support surface, said vehicle comprising a centralized main frame having an upwardly extending forward frame member and a lower tubular frame member extending along the longitudinal axis of the vehicle rearwardly from the lower end of said forward frame member to the rear of said vehicle, steerable front wheel means supported by said forward frame member for contacting said support surface, manual steering means operatively connected to said steerable front wheel means, a seat for a vehicle operator attached to said lower frame member, a one-piece support platform extending to the rear of said vehicle from said forward frame member and laterally across said lower frame member for receiving the feet of the vehicle operator, bearing means operatively connecting said lower frame member to said platform for supporting said frame on said platform for free cambering movement about a longitudinal roll axis coplanar with the longitudinal axis of said platform, transverse axle means rotatably supporting the central frame secured to said platform, rear wheel means underlying said seat means and supported on opposite outboard ends of said axle means for contacting said support surface to support said platform in fixed angular relationship with respect to said support surface while allowing the operator when seated to impart balancing moments through his feet while cambering said central frame and said front wheel means.

4,325,566

COMBINED THRUST AND RADIAL BEARING AND THE ASSEMBLY OF SUCH A BEARING WITH A SUPPORT STRUCTURE

Gerard Stephan, Croissy, France, assignor to Nadella, France

Filed May 12, 1980, Ser. No. 148,679

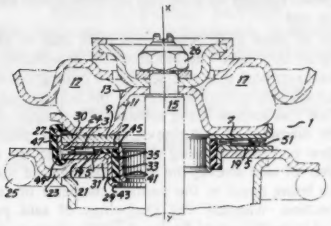
Claims priority, application France, May 25, 1979, 79 13336

Int. Cl.³ B60G *11/14*

U.S. Cl. 280—668 **10 Claims**

1. An assembly comprising a structure defining two axially extending support surfaces and a combined thrust and radial bearing which is combined with said structure and comprises two coaxial radially extending annular bearing plates, a set of rolling elements disposed between said bearing plates, a first of said plates having a first flange extending axially from an inner peripheral edge of said first plate and a second of said plates having a second flange extending axially from an inner peripheral edge of said second plate, the flanges being concentric

with each other, a radial bearing interposed between said flanges, said first plate having a third flange which extends axially from an outer peripheral edge of said first plate and engages a first of said support surfaces so as to be radially



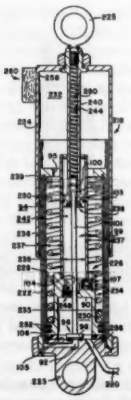
located relative to said structure, and said second plate having axially extending means which engage a second of said support surfaces and radially locates said second plate relative to said structure.

4,325,567

LOAD-LEVELING AIR PUMP

Richard T. Hendrickson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 15, 1979, Ser. No. 85,087
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—711 **1 Claim**



1. In a vehicle having an unsprung mass, a sprung mass supported from the unsprung mass, and a fluid-receiving device for controlling the relative position of said masses, said masses having a variable neutral separation depending upon the amount of fluid within said fluid-receiving device and upon the weight of the sprung mass, a fluid pump for pumping fluid into said fluid-receiving device and powered by the relative motion of said masses in response to vehicle movement, said pump comprising:

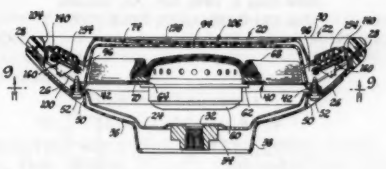
a first housing portion fixedly connected to one of said masses, pressure-responsive means slidably and sealingly received by said first housing portion and a pump piston fixedly connected to the other of said masses and slidably and sealingly received by said pressure-responsive means, said pump piston and said pressure-responsive means cooperating to define a compression chamber therebetween, said pump piston moving relative to said pressure-responsive means to transfer fluid from said compression chamber into said fluid-receiving device, and said pressure-responsive means being movable in response to increasing fluid pressure in said fluid-receiving device to decrease the volume of said compression chamber so that the amount of fluid transfered to said fluid receiving device varies in response to the fluid contained therein.

4,325,568

MODULAR OCCUPANT RESTRAINT SYSTEM

Herbert D. Clark, Kettering; Larry L. Katz, Dayton, and Thomas L. Knoepfle, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 172,516
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—731 **4 Claims**



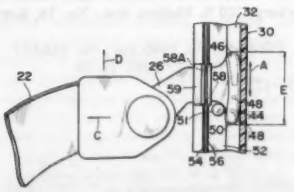
1. In combination with a vehicle steering wheel including a hub portion and at least one spoke portion connecting the hub portion to a rim portion, a modular occupant restraint system including a support member overlying the hub portion and including spaced arms overlying the spoke portion, a container for an occupant restraint cushion over the support member and including spaced extensions, each overlying and respective to a support member arm, a cover overlying the container and including an extension portion overlying and covering the container extensions and underlying the support member arms while leaving the space between the arms open to permit access to such space, switch means located in the space between the support member arms, means removably securing the switch means to the arms, and manually depressable means on the cover extension engageable with the switch means through the container extensions.

4,325,569

EMERGENCY LOCKING DEVICE

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 8, 1980, Ser. No. 184,881
Claims priority, application Japan, Sep. 13, 1979, 54-126811
Int. Cl.³ A62B *35/02*
U.S. Cl. 280—804 **10 Claims**



1. An emergency locking device used in a seatbelt system of a vehicle for locking the movement of an occupant restraining webbing in the event of an emergency situation, comprising:

(a) a guide rail laid on the vehicle body and provided therein in the longitudinal direction with a guide groove;

(b) a slider, which is engaged with the occupant restraining webbing and having a flat head which is inserted into said guide groove;

(c) driving means for moving said slider along the guide rail

so as to automatically fasten the webbing to the occupant when seated; and

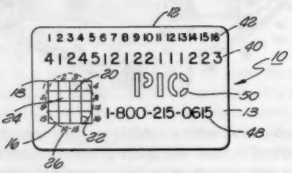
(d) a shoe secured to the head of said slider for aligning the head of the slider in its longitudinal direction with the guide groove of the guide rail and being damaged under a predetermined value of load to make said head rotatable in the guide groove, whereby the head of said slider is pressed against the guide groove to prevent the slider from moving in the guide groove in the longitudinal direction.

4,325,570

IDENTIFICATION SYSTEM

Carlos I. Estrada, 3540 City Terrace Dr., Los Angeles, Calif. 90063

Filed May 5, 1980, Ser. No. 146,484
Int. Cl.³ B42D *15/00*; G06K *9/00*
U.S. Cl. 283—7 **7 Claims**



1. An identification card comprising:

a base;

a fingerprint on said base;

a grid made up of a plurality of squares arranged in rows and columns superimposed over said fingerprint; and

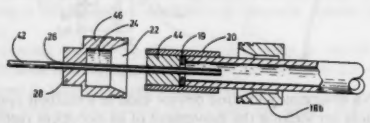
an identifier imprinted on said base, said identifier being a series of individual symbols, each individual symbol representing a fingerprint characteristic, with different individual symbols representing different fingerprint characteristics, said individual symbols of said series being arranged in an order corresponding to a preselected order of said squares of said grid, each of said individual symbols representing a selected fingerprint characteristic appearing in the respective square of said grid, whereby a comparison for identity can be made between said identifier and said fingerprint.

4,325,571

TUBE UNION AND METHOD FOR FORMING A JOINT BETWEEN ADJACENT END PORTIONS OF MALLEABLE TUBING

John E. Funderburg, 36712 Cloverleaf; Franklin H. Stafford, 12334 Gabor Way, both of Madera, Calif. 93637, and Donald R. Funderburg, 220 S. Madera Ave.- No. 18, Kerman, Calif. 93630

Filed May 30, 1980, Ser. No. 154,617
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—177 **5 Claims**



1. A tube union for forming a joint between adjacent end portions of lengths of malleable tubing comprising:

A. a cylindrical sleeve formed from malleable stock for telescopically receiving adjacent end portions of lengths of malleable tubing in a mutually opposed relationship, the inside diameter of said sleeve being substantially equal to the outside diameter of the end portions of said lengths of tubing;

B. a resilient O-ring so shaped and dimensioned as to be adapted to be received concentrically within said sleeve in interposed relation with the end surfaces of said lengths of tubing; and

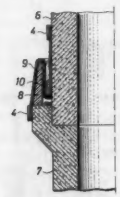
C. a pair of rigid push rings, each push ring of said pair having an axial bore characterized by an inwardly tapering frusto-conical first end section, a cylindrical midsection, an annular second end section, the largest diameter of said first end section being substantially greater than the outside diameter of said sleeve, the smallest diameter of said first end section being slightly less than the outside diameter of said sleeve, the inside diameter of said midsection being equal to the smallest diameter of said first end section, whereby the push-rings of said pair are adapted to be forceably displaced axially along said sleeve into opposed contiguous relation for diametrically expanding the adjacent end portions of said lengths of tubing and said sleeve into an interlocked relationship within the contigiously related first end sections of the push rings of said pair.

4,325,572

ARRANGEMENT IN RAIN-WATER DRAINS OR MANHOLES

Oscar S. Arntyr, Wallingatan 37, S-111 24 Stockholm, and Thord I. Engström, S-950 18 Bensbyn, both of Sweden

Filed May 14, 1980, Ser. No. 149,880
Claims priority, application Sweden, Nov. 8, 1979, 7904515
Int. Cl.³ F16L *27/10*
U.S. Cl. 285—229 **4 Claims**



1. A pipe joint seal, comprising:

(a) two vertically oriented pipe sections disposed one atop the other in axial alignment to define an annular joint therebetween and adapted to be installed in an in-ground environment wherein the external pressure surrounding the pipe sections exceeds the internal pressure within the sections,

(b) the joint including a stepped annular recess in one of the pipe section ends slidingly accommodating a mating end portion of the other pipe section to enable a limited degree of axial movement between the two sections,

(c) an annular sealing cuff surrounding the joint and overlying an external interface zone thereof whereat the two pipe sections meet,

(d) means individually clamping an upper edge of the sealing cuff to the outer periphery of an upper one of said pipe sections and a lower edge thereof to the outer periphery of a lower one of said sections, and

(e) a rigid tubular sleeve surrounding said external interface zone for preventing said sealing cuff from being forced into an open gap of said joint by external pressure upon the axial separation of the pipe sections, said rigid tubular sleeve being disposed beneath the sealing cuff, and the sealing cuff being folded in an S configuration forming two folds and trapping said sleeve in one of the folds and the other fold being between the outer cylindrical surface of one of the pipe sections and said sleeve, and said sleeve sealing cuff and pipe sections being so proportioned and

arranged that said sleeve is constantly held in abutting engagement with said one of the pipe section ends.

4,325,573

DEVICE FOR REGULATING DISCHARGE OF SAND FROM A VEHICLE SANDER

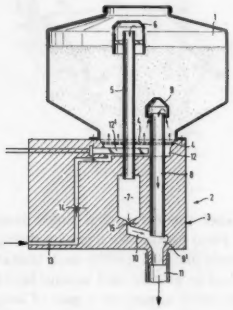
Erik Hefter, Eichenau, and Rolf Baumgarth, Neufahrn, both of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,615

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911075

Int. Cl.³ B61C *15/10*

U.S. Cl. 291—3 **24 Claims**



1. In a device for regulating the discharge of sand from a vehicle sanding apparatus particularly on rail vehicles, a sealed container for sand and having a bottom wall which is penetrable by air, a sand discharge pipe extending into said container through said bottom wall and having one end positionable in front of a vehicle wheel, an air supply line connected to a source of air under pressure and having an end opening to said bottom wall, an exhaust air line having one end extending into said container above the sand when the container is full and having another end connected to said sand discharge pipe, and means in said air supply line and said exhaust air line for controlling the flow of air therethrough such that at a predetermined pressure of supplied air a portion of the supplied air flows through said sand discharge pipe at a rate to discharge a predetermined quantity of sand per unit time from said sand discharge pipe.

4,325,574

SHOCK ABSORBING BUMPER OF A VEHICLE

Yoshiro Umemoto, Nagoya; Yasuhiro Mishima; Shuichiro Takao, both of Toyota; Kazunori Sawada, Aichi, and Nobuo Kobayashi, Okazaki, all of Japan, assignors to Toyota Jidosho Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 1, 1980, Ser. No. 165,216

Claims priority, application Japan, Sep. 26, 1979, 54-131973[U]

Int. Cl.³ B60R *19/02*

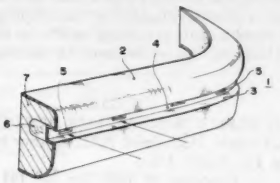
U.S. Cl. 293—120 **7 Claims**

1. A shock absorbing bumper of a vehicle, comprising:

a flexible, elastic compressible core member having a front side and a rear side, and an elongated horizontal groove extending along the front side of said core member along the length thereof;

an elastic external member overlying the front side of said core member and shaped to provide an elongated horizontal recess overlying said horizontal groove of said core member, said external member having a series of holes passing therethrough spaced along the length of said horizontal recess; and

an elastic facing base having a rear wall and a front wall and shaped so that its said rear wall fits within said horizontal recess while its said front wall projects therefrom, said front wall carrying a decorative facing and said rear wall



carrying a plurality of hooks interengaging with the holes of said horizontal recess, each of said hooks being provided with undercuts extending in at least three different directions.

4,325,575

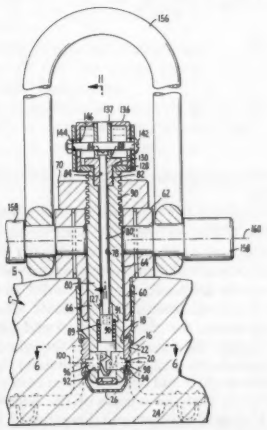
HOISTING COUPLING FOR CONCRETE SLABS

Jack A. Holt, Belmont; Robert L. Lathrop, San Jose, both of Calif., and Philip A. Torbet, Port Washington, N.Y., assignors to The Burke Company, San Mateo, Calif.

Filed Mar. 28, 1977, Ser. No. 781,696

Int. Cl.³ B66C *1/66*; E04B *1/00*

U.S. Cl. 294—89 **11 Claims**



1. A remotely releasable hoisting coupling for selective engagement with a concrete slab having a surface, a passage formed in the slab in generally perpendicular relationship to the surface and opening therethrough, and an annular abutment within the passage below the surface, said coupling comprising: a body sized for entry into said passage, said body having a longitudinally extending bore formed therein; a single pair of lugs engageable with said abutment and supported in said body for movement relative thereto between a position protruding laterally from said body at which said lugs engage the abutment and a position retracted into said body at which said lugs are disengaged from the abutment, said lugs being rockable relative to the body about a common diametric axis extending normal to the body when engaged with the abutment; an actuator rod axially moveable within said bore; means operatively connecting said lugs to said actuator rod so that in response to axial movement of the actuator rod in one direction relative to said body said lugs are moved to the protruding position and, in response to axial movement of the actuator rod

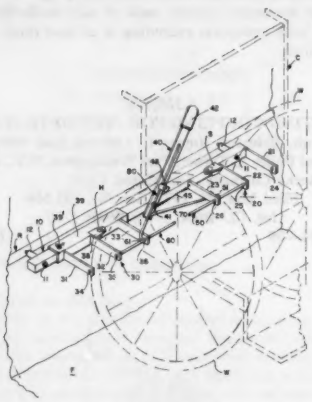
in an opposite direction relative to said body, said lugs are moved to the retracted position; means carried by said body for selectively moving said rod axially relative to said body to move the lugs between the protruding and retracted positions; and, a lifting bail carried by said body so as to be disposed to the exterior of a slab engaged by the coupling, said bail being pivotal about an axis extending parallel to the diametric axis about which the lugs are mounted for rocking movement.

4,325,576

ADJUSTABLE WHEELCHAIR HOLDING DEVICE

Dale H. Guthrie, High Point, N.C., assignor to REB Manufacturing, Inc., Carey, Ohio

Filed Sep. 29, 1980, Ser. No. 191,385
Int. Cl.³ B60N *1/02*; B60P *7/08*; B61D *45/00*
U.S. Cl. 296—65 R **10 Claims**



1. A holddown device for the two wheels of a wheelchair comprising:

(A) a horizontal bar anchored to said vehicle,

(B) a first U-shaped bracket having its legs extending horizontally and orthogonally to said bar for engaging one wheel of a wheelchair, which bracket is fixed to said bar,

(C) a second U-shaped bracket similar and parallel to said first U-shaped bracket but slidable along said bar and having means for clamping it to said bar so that its legs will engage the other wheel of the wheelchair,

(D) a separate pin means for each bracket that is horizontally slidable to close and open the open ends of the "U" of said bracket so that the wheels of the wheelchair may enter said U-shaped brackets and thereafter be locked therein by said pins,

(E) a vertical lever pivoted intermediate its ends to said bar intermediate said brackets,

(F) a first link means pivoted between said lever and said pin in said first fixed U-shaped bracket, and

(G) a second link means pivoted to said pin in said second U-shaped bracket, and to said lever opposite the pivot of said lever from said first link means, said second link means being adjustable longitudinally, whereby said lever simultaneously slides said pins in opposite directions.

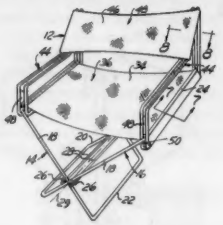
4,325,577

FOLDABLE CHAIR

Sacha Thebaud, P.O. Box 446, Port-Au-Prince, Haiti

Filed May 22, 1980, Ser. No. 152,520
Int. Cl.³ A47C *4/28*
U.S. Cl. 297—45 **5 Claims**

1. A foldable chair comprising a pair of substantially rectangular similar support frames disposed such that the plane of one of said support frames intersects the plane of the other of said support frames in the form of a figure X as viewed from the front, pivot means enabling one of said support frames to pivot relative to the other at the line of intersection of said support frames, each of said support frames being made of a single piece of rod material defining a front leg, a rear leg disposed substantially parallel to said front leg, a longitudinally extending foot cross-member disposed substantially parallel to said pivot line and a first lateral cross-member disposed substantially parallel to said longitudinal foot cross-member, at least one second lateral cross-member attached to said support frame in close proximity to said first lateral cross-member



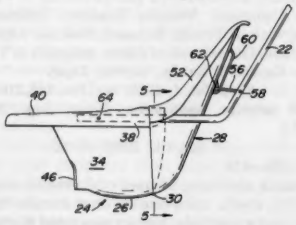
substantially parallel thereto, and a single length of pliable material forming a seat portion for a person sitting in said chair, said length of pliable material having each lateral edge portion frictionally attached to at least said second lateral cross-members, wherein said pivot means are a pair of longitudinal rods disposed parallel to said cross-members and each attached to a single one of said support frames and having a portion at each end projecting beyond the front and rear legs of said single one of said support frames, said end portions abutting respectively against the front leg and the rear leg of the other of said support frames.

4,325,578

SWING SEAT ASSEMBLY

Robert L. Borucki, Jenkintown, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.

Filed May 19, 1980, Ser. No. 151,087
Int. Cl.³ A63G *9/16*
U.S. Cl. 297—281 **8 Claims**



1. A swing seat assembly comprising a back portion adjustably connected to a seat portion, said portions having overlapping downwardly curved flanges and mating upper edges thereby defining a tunnel on each side of the seat portion, and a hanger supported for suspending the seat portion from above, said hanger support including a pair of arms, each arm being connected to said seat portion.

4,325,579

WELL FOR THE SOLUTION MINING OF SALT FROM AN UNDERGROUND SALT FORMATION AND A METHOD FOR OPERATING SAID WELL

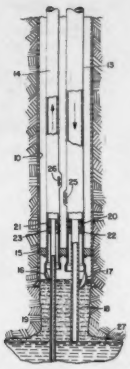
Cornelis Kwantes; Michael Mansell, and Bob P. Stor, all of Sappemeer, Netherlands, assignors to Shell Internationale Research, The Hague, Netherlands

Filed Dec. 11, 1979, Ser. No. 102,494

Claims priority, application Netherlands, Jan. 12, 1979, 7900249

Int. Cl.[3] E21B *43/28*

U.S. Cl. 299—5 6 Claims



1. A well for the solution mining of salts from an underground salt formation, comprising a borehole extending from the earth's surface downwards into the formation, a casing that is cemented in said borehole down to the upper level of said formation, two parallel tubing strings of effective lengths extending through said casing downwardly beyond said casing for introducing leaching water into the salt formation and withdrawing pregnant leach liquor from said formation, each of said strings carrying a tail pipe of a diameter smaller than the diameter of the string, which tail pipe is axially telescopic in said string, can extend downwardly beyond said string and carries a liner assembly at its upper part that can engage the inner wall of said string at any desired location above the bottom end of the string, at least one of said tubing strings being provided at its lower extremity with a valve that can be automatically closed if the tail pipe is raised into the string; the well additionally being provided with plug means that can be lowered onto the upper extremity of at least one of the tail pipes in order to seal the flow passage of liquid and with pumping means for pumping liquid via the tubing string and the tail pipe having the unrestricted flow passage into the salt formation in order to increase the hydraulic pressure therein to cause or provide substantial assistance in raising the sealed tail pipe.

4,325,580

ROADWAY PLANING APPARATUS

George W. Swisher, Jr., Oklahoma City; Donald W. Smith, Edmond, and Carl D. Parker, Yukon, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed May 7, 1979, Ser. No. 36,447

Int. Cl.[3] E01C *23/09*

U.S. Cl. 299—39 33 Claims

1. An improved planer apparatus for removing a top portion of a paved roadway to form a roadway surface having a predetermined grade and cross-slope, comprising:

a main frame;

drive means, disposed in contact with the roadway, for supporting and moving the main frame;

means for selectively varying the spatial orientation of the main frame with respect to the drive means; and

planing means supported by the main frame for cutting the top portion of the roadway comprising:

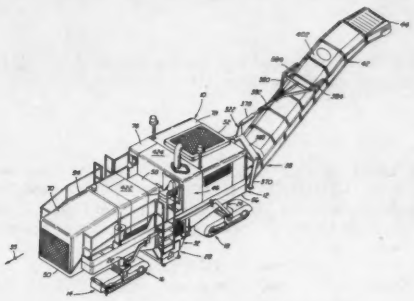
rotatable cutter drum means having a first end and a second end and having an axis fixed with respect to the main frame, for cutting the top portion of the roadway; and

cutter drive means for powering rotation of the cutter drum means, the cutter drive means comprising:

rotating hub means having a first end and a second end, with the first end engaged with the first end of the cutter drum means for driving rotation of the cutter drum means;

first cutter power means for driving rotation of the rotating hub means; and

hub support means for supporting the rotating hub means



and for bearing the bending load applied to the rotating hub means by the first cutter power means, the hub support means comprising:

a first hub support surface carried by the main frame, disposed in a plane normal to the rotational axis of the rotating hub means, adjacent the first end of the rotating hub means;

a second hub support surface carried by the main frame, disposed in a plane normal to the rotational axis of the rotating hub means, adjacent the second end of the rotating hub means; and

bearing means mounted on the first and second hub support surfaces for rotatably engaging the rotating hub means at the first end and at the second end thereof.

4,325,581

VEHICLE LOAD SENSING ARRANGEMENT

John F. Pickering, The Green Broadwell, near Rugby, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 15, 1980, Ser. No. 112,330

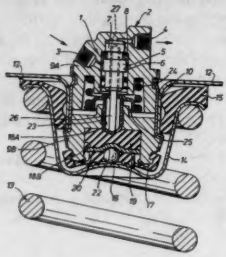
Claims priority, application United Kingdom, Jan. 16, 1979, 01606/79

Int. Cl.[3] B60T *8/22*

U.S. Cl. 303—22 R 8 Claims

1. A load sensing arrangement comprising force-reduction means, input means for transferring a force from a road spring to the force-reduction means, a control valve having a valve operating member which is movable to control the flow of fluid pressure through the valve, the force-reduction means being arranged to apply a proportion of the road spring force directly to the valve operating member and through it directly to said control valve, and the remainder of the road spring force to the sprung part of the vehicle, and a resilient control means acting in opposition to the said proportion of the road spring force, the effective force acting directly on the valve operating member being the difference between the said pro-

portion of the road spring force and the force of the resilient control means, said force-reduction means, said input means,



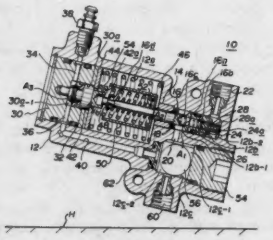
said control valve and said resilient control means all being arranged coaxially with respect to one another.

4,325,582

HYDRAULIC PRESSURE CONTROL VALVE ASSEMBLY FOR AUTOMOTIVE HYDRAULIC BRAKE SYSTEM

Hitoshi Kuboto, and Kazuaki Shimizu, both of Fujisawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 26, 1979, Ser. No. 33,348
Claims priority, application Japan, Apr. 28, 1978, 53/51041
Int. Cl.³ B60T *8/14;* 303 *24 C;24 F;6 C*
U.S. Cl. 303—24 F **7 Claims**



1. A hydraulic pressure control valve assembly for a hydraulic brake system of a wheeled vehicle, the control valve comprising:

a proportioning valve arranged between a brake master cylinder and a wheel brake cylinder of the rear wheels of the vehicle and provided with a plunger which is axially movable in a first direction against a certain spring in response to a hydraulic pressure applied to an inlet port to control the magnitude of the hydraulic pressure at an outlet port;

a deceleration sensing valve which responds when the deceleration of the vehicle exceeds a predetermined value and which is associated with a piston sealingly and slideably disposed in a chamber to define a working chamber which communicates with said inlet port, said piston supporting one end of said certain spring and said working chamber being isolated from said inlet port when the deceleration of the vehicle exceeds the predetermined value;

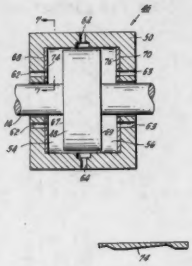
means, including a pre-loaded spring, for rendering said pre-loaded spring effective to act on said plunger in a direction opposite to said first direction when the pressure acting on the piston exceeds a predetermined value and thus moves said piston beyond a predetermined distance against the force of said certain spring.

4,325,583

LOW AXIAL STIFFNESS THRUST BEARING

James D. McHugh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,071
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 **2 Claims**



1. A low axial stiffness thrust bearing comprising:

a housing having a generally cylindrical space formed therein;

a generally cylindrical thrust collar located coaxially within said cylindrical space, the axial length of said cylindrical space being significantly greater than the axial length of said thrust collar such that said thrust collar may be moved axially within said cylindrical space over a predetermined distance and such that first and second fluid chambers are formed on opposite sides of said thrust collar when said thrust collar is located centrally within said cylindrical space;

fluid circuit means for supplying fluid under pressure to said first and second chambers in such a manner that said fluid attempts to maintain said thrust collar at a predetermined axial location within said cylindrical space even when external thrust forces are placed on said thrust collar and wherein the axial force placed on said thrust collar by said bearing in a first axial direction is determined by the fluid pressure in said first fluid chamber and wherein the axial force placed on said thrust collar by said bearing in a second opposite axial direction is determined by the fluid pressure in said second fluid chamber;

the axial length of said first fluid chamber being defined between a first axial end of said thrust collar and a first axial end of said cylindrical space and the axial length of said second fluid chamber being defined between a second axial end of said thrust collar and a second axial end of said cylindrical space;

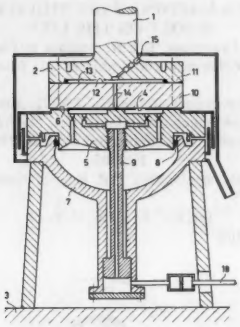
said fluid pressure in said first and second fluid chambers varying as a function of the axial position of said thrust collar with respect to said predetermined location as long as the axial length of said first and second fluid chambers remains greater than a predetermined value; and

pressure variation means for causing said fluid pressure in said first and second fluid chambers to vary as a second function of the axial position of said thrust collar with respect to said predetermined location whenever the axial length of the respective chamber falls below said predetermined value but is still greater than zero, said pressure variation means comprising first and second means for producing a hydrodynamic film pressure support in said first and second fluid chambers, respectively, whenever the respective axial length of said first and second chambers falls below said predetermined volume.

4,325,584
MOUNTING FOR A ROTOR

Alfred Christ, Zurich, Switzerland, and Mario Peron, Schio, Italy, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,432
Claims priority, application Switzerland, Nov. 2, 1979, 9851/79
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 5 Claims

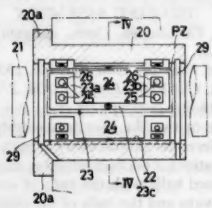


1. Mounting for a rotor relative to a base; said rotor having a sliding surface; a mounting member mounted relative to the base; said mounting member comprising a support surface cooperating with said sliding surface; the improvement that the rotor comprises a plate which is connected to the rotor at a point so as to be immovable in the direction of support but tiltable relative to the rotor; said plate having, on its one side, the sliding surface of the rotor; a pressure cushion the cross sectional surface of which is formed on the other side of said plate; the cross sectional surface of the pressure cushion and the support surface of the mounting member being located opposite each other; the effective portion of said support surface and the cross sectional surface of said pressure cushion being substantially the same size; and the pressure in the pressure cushion and the pressure in the space located between said sliding surface and said effective portion of the support surface being kept substantially the same as each other.

4,325,585
FLUID BEARING

Kazuhiko Sugita, Anjo, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 8, 1980, Ser. No. 195,179
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 3 Claims



1. A fluid bearing for rotatably supporting a rotary shaft comprising:

a bearing member having an internal bore which forms a bearing surface;

a plurality of U-shaped fluid pockets formed in a circumferential direction on said bearing surface;

each of said U-shaped fluid pockets being defined by a pair of axially spaced rectangular fluid pockets and a supply groove formed in parallel relationship with the axis of said bearing member for fluidically communicating said pair of fluid pockets;

a plurality of first land portions formed between said pair of fluid pockets;

a supply port formed in each of said supply grooves for admitting pressurized fluid;

at least one second land portion formed in each of said fluid pockets;

an exhaust port formed in each of said second land portions for discharging pressurized fluid;

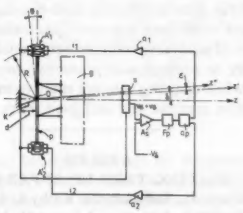
each of said supply grooves being located at a lower position in a gravitational direction in its associated U-shaped fluid pocket;

said plurality of U-shaped fluid pockets being arranged symmetrically with respect to a vertical plane which includes the axis of said bearing member.

4,325,586
ELECTROMAGNETIC PROCESS FOR CONTROLLING ORIENTATION OF A PLATFORM AND PLATFORM FOR CARRYING OUT SAID PROCESS

Bernard Hubert, Le Cannet, and Pierre Poubeau, Le Pecq, both of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Feb. 27, 1980, Ser. No. 125,058
Claims priority, application France, Feb. 28, 1979, 79 05283
Int. Cl.³ F16C *39/06*
U.S. Cl. 308—10 9 Claims



1. Apparatus for electromagnetically controlled orientation of a platform in a system with a stationary plane comprising

a platform spaced relative to a stationary plane and having at least three reference points for inclination movement of said platform with respect to said stationary plane,

said reference points including, located at said reference points,

a flexible connection means pivotally connecting said platform to said stationary plane,

at least one electromagnetic means located between said platform and said stationary plane with each said electromagnetic means including

permanent magnet means fixed to said platform,

a coil fixed to said stationary plane;

detection means for detection of the deviation of said platform with respect to its orientation with said stationary plane, said detection means located relative to said platform to supply a voltage approximately proportional to said deviation;

a control loop means to amplify said deviation voltage and to apply resulting current to said coil fixed to said stationary plane, said control loop means electrically connected to said detection means and said coil with the resulting electromagnetic forces generated between said magnet means and said coil by said current produc-

ing an angular motion of said platform with respect to said stationary plane.

4,325,587

PROTECTIVE DEVICE FOR UNIVERSAL JOINTS

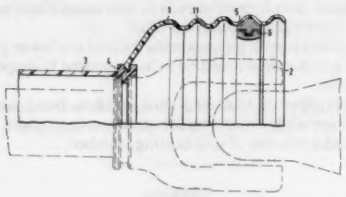
Peter Seigert, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 133,986

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2912939

Int. Cl.³ F16C *1/06;* F16D *3/84*

U.S. Cl. 308—36.1 7 Claims



1. A protective device for a universal joint particularly for agricultural implements comprising: a hollow protective member having a generally frusto-conical configuration and consisting essentially of resilient material, said protective member being supported to surround said universal joint; an annular support member fixedly connected to the interior of said hollow protective member approximately in the region of the bending center of said universal joint; and a bearing ring concentrically mounted within said support member and arranged to be rotatable relative thereto; said bearing ring being normally spaced from said universal joint and located to abut against parts of said universal joint upon axial deflection of said joint thereby to support said protective member against said joint parts while enabling relative rotative movement between said protective member and said joint parts.

4,325,588

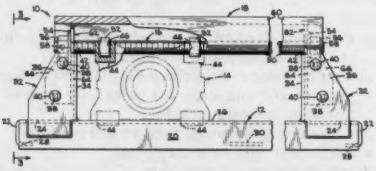
BEARING TAKE-UP APPARATUS

James R. Elliott, Jr., Indianapolis; Kathy L. Layne, Greenwood; Donald W. Hitch, Lizton, and Larry G. Marshall, Lebanon, all of Ind., assignors to P T Components, Inc., Indianapolis, Ind.

Filed May 30, 1980, Ser. No. 154,749

Int. Cl.³ F16C *35/00*

U.S. Cl. 308—59 11 Claims



1. In a take-up apparatus for adjustable mounting of a bearing housing, comprising:

a base;

a pair of end walls attached to the base;

a threaded adjustment screw;

screw anchoring means rigidly secured to both ends of said adjustment screw and positioned adjacent corresponding sides of said end walls with said adjustment screw supported on upper surfaces of said end walls for precluding both longitudinal and downward movement of said adjustment screw;

slotted end brackets receivable over said adjustment screw for allowing rotation while precluding both upward and transverse movement thereof relative to said base;

means for releasably connecting said brackets to said base; and a cover carried by said brackets.

4,325,589

SUPPORT OF A MACHINE PART WHICH ROTATES ON A BOLT OR THE LIKE

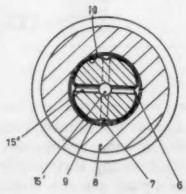
Manfred Hirt, Cravinhos, Brazil, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 88,792, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 870,413, Jan. 18, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,745

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702321

Int. Cl.³ F16C *3/02, 3/14*

U.S. Cl. 308—101 11 Claims



1. A multi-surface friction bearing construction for a machine part, for example a planet gear, which rotates on a stationary pin or the like, the rotating machine part having a loading direction which is stationary relative to the pin, wherein the improvement comprises

several bearing surfaces on the circumference of said stationary pin and formed by pitch circles each having a cylindrical surface, the rotating machine part having a circular cylindrical bore, the radius of each cylindrical surface differing from the radius of said cylindrical bore of said rotating part and forming points of intersection with the radii of the adjacent cylindrical surfaces, said stationary pin in addition having axially extending grooves arranged in the surface thereof, said rotating part at least in the carrying area of its circular cylindrical bore being of a material having good sliding characteristics and a higher heat-expansion coefficient than that of the other portions of the rotating part.

4,325,590

SELF-CONTAINED PRE-LOADED ANTIFRICTION BEARING ASSEMBLY

James J. Pethis, Farmington, Conn., assignor to Textron Inc., Providence, R.I.

Filed May 22, 1980, Ser. No. 152,374

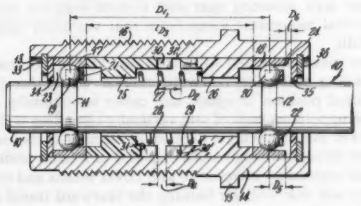
Int. Cl.³ F16C *19/08, 25/08, 27/04*

U.S. Cl. 308—184 R 11 Claims

10. In a textile or the like spindle assembly, a spindle shaft having a circumferential ball-raceway at each of two longitudinally spaced locations, two ball retainers each having a complement of retained balls with the balls of one complement in one of said raceways and the balls of the other complement in the other of said raceways, an angular-contact outer race ring assembled to each complement of balls in the axial direction for loaded ball contact within the axial space between the planes of ball centers of the respective complements, axially spaced adjacent means associated with adjacent axial ends of said outer race rings and characterized by angularly spaced axially

extending dog and dog-slot formations, and spring means in axially compressionally loaded relation to said outer race rings via said axially spaced adjacent means, there being at least one relative angular positioning relation of said axially spaced adjacent means wherein said formations register to permit axially compressed displacement of said axially spaced adjacent means toward each other to a first extent which exceeds their axially compressed displaceability when said formations are not in such registration, said first extent being at least substantially the axial extent to which the radial plane of the locus of centers of curvatures of the raceway of one of said outer race rings is offset from the axially outer end of said one outer race ring.

11. As an article of manufacture, an elongate spindle-mounting bushing having external formations for mounting the same to a textile-machine mounting rail or the like, said bushing having a straight cylindrical bore, and a unitary spindle and pre-loaded bearing assembly of external cylindrical contour adapted for removable reception in the bushing bore; said bearing assembly comprising a spindle shaft of length exceeding that of said bushing and having near one end a circumferential ball-raceway at each of two locations which are longitudinally spaced to an extent less than the length of the bushing



bore, an angular-contact outer race ring and an associated ball complement assembled to each of said spaced raceways in the axial direction for loaded ball contact within the axial space between the planes of ball centers of the respective complements, axially spaced adjacent means associated with adjacent axial ends of said outer rings and characterized by angularly spaced axially extending dog and dog-slot formations, and spring means in axially compressionally loaded relation to said outer race rings via said axially spaced adjacent means; said outer race rings fitting the bushing bore, and removable axial locating means coacting between spaced bushing-bore locations and the axially outer ends of the outer race rings of said assembly for axially retaining the inserted bearing assembly, there being at least one relative angular positioning relation of said axially spaced adjacent means wherein said formations register to permit axially compressed displacement of said axially spaced adjacent means toward each other to a first extent which exceeds their axially compressed displaceability when said formations are not in such registration, said first extent being at least substantially the axial extent to which the radial plane of the locus of centers of curvatures of the raceway of one of said outer race rings is offset from the axially outer end of said one outer race ring.

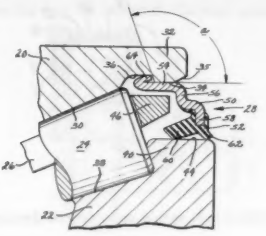
4,325,591

SEALED AND UNITIZED BEARING

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Sep. 25, 1980, Ser. No. 190,513
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.2 **19 Claims**

1. A bearing arrangement comprising: inner and outer races having opposed raceways between which a space exists, a retention surface at the end of one of the races and an undercut opening out of the retention surface; rolling elements arranged in a row between the raceways of the two races to enable the races to rotate relative to each other; closure means for generally closing the space between the two races, the closure means including a metal element having a wall that is frictionally engaged with the retention surface at the end of said one race



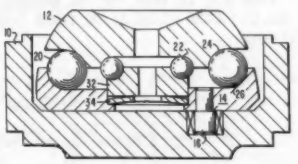
and a locking lip that extends from the wall and is doubled back with respect to the wall, the locking lip being located within the undercut.

4,325,592

AXIAL THRUST BEARING ASSEMBLY

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Jan. 19, 1981, Ser. No. 189,066
Int. Cl.³ F16C *19/10, 19/52, 27/08*
U.S. Cl. 308—219 **5 Claims**



1. An axial thrust bearing assembly for supporting an axial load on a load support member, said bearing assembly comprising: a main antifriction axial support bearing disposed between said load support member and said load; an auxiliary antifriction bearing arranged between said load support member and said load and concentrically within said main bearing; and spring means disposed axially adjacent said auxiliary bearing and acting between said load support member and said load through said auxiliary bearing, said spring means being so positioned and selected such that a predetermined axial load is taken up by said auxiliary antifriction bearing while any additional load is taken up by said main bearing.

4,325,593

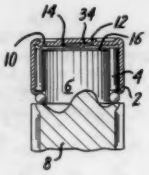
COMPOSITE BEARING HAVING DEFORMABLE WASHER

Bernard Mallet, Limay, France, assignor to Nadella, France

Filed Jun. 25, 1980, Ser. No. 162,749
Claims priority, application France, Jun. 27, 1979, 79 16516
Int. Cl.³ F16C *19/32, 27/08*
U.S. Cl. 308—163 **9 Claims**

1. In a composite bearing of the type comprised of a cup having a set of antifriction bearing elements, and a deformable washer disposed at the bottom of the cup for bearing against the end face of a shaft during use of the composite bearing, the improvement wherein said washer comprises a body portion having a stud projecting outwardly from one side thereof and having a recess in the other side thereof opposite said stud, said

stud and recess being configured so that said stud deforms inwardly and is pushed in towards said body portion to at least



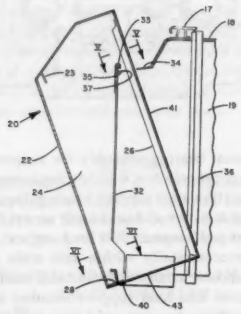
partly fill said recess during mounting of the composite bearing and shaft.

4,325,594

APPARATUS FOR SECURING A COVER TO AN AIR CONDITIONING UNIT

Richard D. Lang, Chittenango, and Theodore S. Bolton, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 19, 1980, Ser. No. 151,041
Int. Cl.³ A47B *43/00, 81/00;* H05K *5/00*
U.S. Cl. 312—100 **6 Claims**



1. Apparatus for securing a cover to an air conditioning unit such that the cover has a closed position and a service position which comprises:

a cover including a front panel portion and at least one side portion, said front panel portion serving to cover at least a portion of the unit and said front panel portion having both latching means and pivot means associated therewith, and said side portion having an inwardly extending flange; and

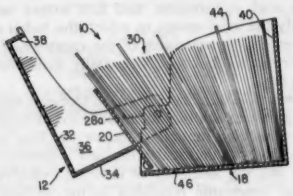
an air conditioning unit assembly including a front support adapted to be concealed by the front panel portion of the cover, said front support including a latching element for coacting with the latching means of the cover, pivot projection means extending from the assembly for coacting with the pivot means of the cover, and a control panel extension extending to engage the side portion of the cover to properly position the cover and to engage the flange of the cover to secure the cover in the service position.

4,325,595

CARD FILE

Jack Solomon, Long Beach, N.Y., assignor to Oxford Pendaflex Corp., Garden City, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,190
Int. Cl.³ A47B *63/00;* B65D *43/24*
U.S. Cl. 312—183 **11 Claims**



1. In an index or file card storage device of the type having a compartment including a bottom wall, two side walls and a front wall all extending vertically and rigidly therefrom, the improvement comprising:

a rear wall mounted near said bottom wall for rearward pivotal movement away from said vertically extending walls;

cover means mounted to at least one of said vertically extending walls for rearward pivotal movement from a closed position in which said cover substantially covers the uppermost ends of said vertically extending walls, said cover means having a depending member at its rear; and

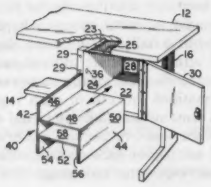
travel circumscribing means disposed in a fixed position on said depending member of said cover means and contacting said rear wall for limiting the rearward travel of said rear wall, said travel circumscribing means maintaining said rear wall in an upright position when said cover means is in said closed position but permitting increased rearward pivoting of said rear wall as said cover is pivoted away from said closed position.

4,325,596

SUPPLY CABINET PARTITION

Joseph M. Bell, Conway, Ark., assignor to Tiffany Industries, Inc., St. Louis, Mo.

Filed Aug. 13, 1980, Ser. No. 177,780
Int. Cl.³ A47B *27/00, 83/04*
U.S. Cl. 312—194 **10 Claims**



1. A cabinet and partition assembly comprising:

(a) a cabinet including:

1. a pair of substantially vertical side panels disposed in spaced parallel relation,
2. a lower panel extending between said side panels,
3. a rear closure panel, and
4. said side panels and said lower panels defining a front end access opening,

(b) a removable partition including:

1. opposed side members,
2. at least one perpendicular member extending substantially uninterruptedly between said side members, and
3. the overall height of said side members and the overall

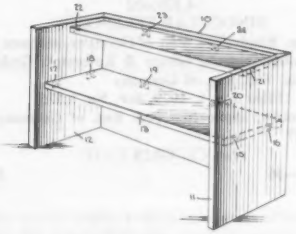
width of said side members defining a square having a side dimension substantially the same as the width of the access opening, said access opening optionally receiving said partition in a front access shelf mode in which the opposed side members are parallel to said opposed cabinet side panels and the perpendicular member provides an intermediate shelf and also receiving said partition in a front access divider mode in which the opposed side members are perpendicular to said side panels and the perpendicular member provides an intermediate divided, when the partition is withdrawn, rotated through ninety degrees (90°) and re-inserted within the cabinet.

4,325,597

FURNITURE SYSTEMS

Andrew I. Morrison, Setauket, N.Y., assignor to Knoll International, Inc., New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,437
Int. Cl.³ A47B *43/00*
U.S. Cl. 312—258 **18 Claims**



1. A furniture system comprising:

A. a multi-section module constituted by a plurality of core panels in side-by-side relation, the adjacent edges of the side-by-side core panels being mitered at an angle whereby when the sections, when folded in, are at right angles to each other, and facing layers formed of textile material laminated to the inner and outer faces of said panels to define interconnecting hinges therefor, formed by both facings, whereby the section of the module may be folded over to provide a flat state structure for storage and shipment, said module being erected by folding in sections thereof to define a structure having at least a vertical rear wall and two vertical side walls hinged to the ends of the rear wall to form an alcove, said facing layers having a compressible fuzzy surface to close any gaps in the hinged junctions between said walls; and

B. at least one removable horizontal component receivable within the alcove to bridge the side walls and connected thereto by fastening elements.

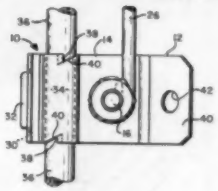
4,325,598

GROUND CLAMP FOR GROUNDING COAXIAL CABLE

Ignazio Leonardo, Mountainside, N.J., assignor to Diamond Communication Products, Inc., Garwood, N.J.

Filed Dec. 21, 1979, Ser. No. 105,965
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 L **3 Claims**

1. A grounding clamp including in combination a generally rectangular first plate, a generally rectangular second plate, part of which has a flat surface that is adjacent to the first plate and another part that is shaped to form a nest for an electrical conductor, a bolt through adjacent flat portions of said plates for loosely and swingably retaining said plates and for clamping said plates together, said nest (a) in one angular relation of said plates confronting part of said first plate for clamped closure of said nest and (b) in another angular relation of said plates being exposed for reception of a conductor inserted therein, one or more inwardly directed prongs integrally formed from the nest and extending only substantially normal to and in the direction of the geometric plane of said flat surface and to an extent to contact with the periphery of a conductor located in the nest, an integrally formed upstanding lug



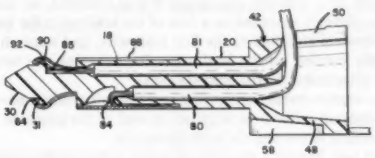
along the edge of said first plate and remote from said bolt when said plates are in said one angular relation, said lug having a slot aperture therein, and said second plate at its edge remote from said bolt having a tab enterable into the slot aperture in the course of swing rotation of said plates from said second angular relation into said first angular relation.

4,325,599

PHONE PLUG

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1979, Ser. No. 100,667
Int. Cl.³ H01R *11/08*
U.S. Cl. 339—103 R **8 Claims**



1. Phone plug components for the coaxial in-tandem termination of first and second conductors, said phone plug components comprising:

a dielectric body having a first end, a second end, and a shaft lying between said ends, said shaft having a first cylindrical surface thereon, said shaft having a shoulder which converges sharply radially inward from the first cylindrical surface to a neck which is proximate to said second end, said neck diverging radially outward to a nose which forms said second end and is of substantially the same diameter as the first cylindrical surface, said dielectric body further having first and second bores extending into said first end of said shaft, said first bore communicating with said first cylindrical surface, said second bore communicating with said neck;

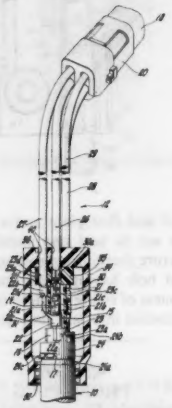
an electrically conductive tubular sleeve having an inside diameter substantially equal to the outer diameter of the first cylindrical surface, said sleeve having apertures therein proximate to one end thereof; whereby

upon locating said first and second conductors through said first and second bores respectively, and locating said tubular sleeve over said shaft until said apertures are proximate to said neck, and compressing said sleeve until it shears at said converging shoulder and collapses about said neck, electrically isolated first and second conductive surfaces are formed, said first conductive surface around said first cylindrical surface and in contact with said first conductor, said second conductive surface around said neck and in contact with said second conductor.

4,325,600
PIGTAIL ASSEMBLY

Charles R. Nestor, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 6, 1980, Ser. No. 127,870
Int. Cl.³ H01R 13/52
U.S. Cl. 339—116 C 4 Claims



1. In a pigtail assembly which includes an end connector having a plurality of insulated lead wires extending therefrom, a terminal attached to the end of each lead wire having a contact for assembly to and retention on a respective ring contact of a multiple ring contact post terminal, an insulator sleeve slidably mounted on a first of the lead wires for isolating the terminal attached to the first lead wire, and a splash guard slidably carried on the lead wires for covering the terminals after attachment to the post terminal,

the improvement comprising said insulator sleeve having an integral radial boss adjacent an end of the insulator sleeve which is toward the end connector,

said boss having a plurality of guide holes for the respective remaining lead wires, and

said insulator sleeve having a pair of circumferentially spaced slots at an end opposite said boss, which are aligned with respective ones of said guide holes, said spaced slots cooperating with respective ones of the terminals attached to the remaining lead wires to assure their proper seating on the post terminal and location relative to each other when the insulator sleeve is seated on the post terminal.

4,325,601
OPTICAL SCANNING DEVICE

Hiroyoshi Funato, Chigasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,698
Claims priority, application Japan, Mar. 2, 1979, 54-24316
Int. Cl.³ G02B 27/17
U.S. Cl. 350—3.71 7 Claims

1. An optical scanning device comprising:

a hologram recording medium having a photo sensitive hologram surface which is rotatable about an axis;

a scanning surface adjacent said hologram recording medium;

first light source means for directing a principal ray of an object light onto said hologram surface at an angle α with respect to a plane normal to said hologram surface; and

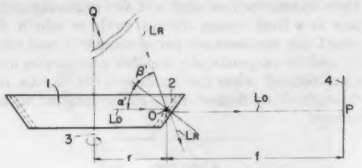
second light source means for directing a principal ray of a reference light onto said hologram surface at an angle β with respect to a plane normal to said hologram surface,

wherein angles α and β are selected such that:

$$\cos\beta=\cos\alpha(1+(r/f)\cos^2\alpha)$$

where:

r=distance between said axis and said hologram surface



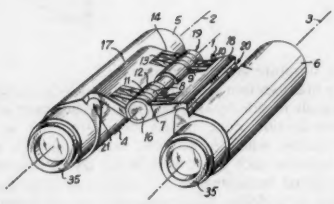
f=distance between said scanning surface and said hologram surface,

whereby a shift in the position of a spot of said principal ray of said object light on said scanning surface in response to a shift of said axis is minimized.

4,325,602
BINOCULAR TELESCOPE

Karl H. Lange, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G., Bünde, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,576
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800667
Int. Cl.³ G02B 23/18
U.S. Cl. 350—36 14 Claims



1. A folding binocular telescope comprising:

a pair of optically aligned telescope bodies;

a segmented bridge connecting said bodies, each of said bodies being hingedly attached to one segment of said bridge by a side hinge, said side hinges having their pivoting axes aligned with but offset from the optical axes of said telescope bodies;

a bridge hinge joining said bridge segments, the pivoting axis of said bridge hinge being aligned with the optical axes of said telescope bodies, said side hinges, said bridge hinge, said pair of aligned telescope bodies, said segments, folding together in an accordion-type hinge, said binocular telescope when fully folded having a height substantially equaling the height of said telescope bodies and a width not exceeding three times said telescopic body height.

4,325,603
ELECTRO-OPTIC ANALOG-TO-DIGITAL CONVERTER

Emanuel Marom, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1978, Ser. No. 949,717
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.14 11 Claims

10. An electro-optic analog-to-digital converter for digitizing an applied analog signal comprising:

a source of an analog signal;

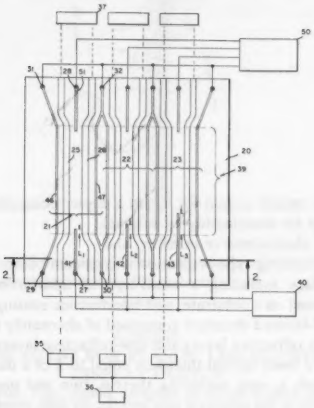
an electro-optic crystal substrate;

a plurality of closely-spaced paralliel optical waveguide pairs disposed in said substrate;

a laser source;

means for simultaneously applying laser energy from said laser source to one waveguide of each of said waveguide pairs;

electrical conductors disposed on said substrate and connected to said source of an analog signal for simultaneously applying said analog signal across a coupling region of each of said plurality of waveguide pairs so as to induce coupling of laser energy between said one wave-



guide and the other waveguide of each of said waveguide pairs, the lengths of said coupling regions being determined by the relationship $L_n=2^{n-1}L_1$, where L_1 is the coupling region length for a first waveguide pair and $n=1, 2, 3 \ldots$, identifies a specific pair of said plurality of waveguide pairs, said coupling being proportional to said applied analog signal and to the lengths of said coupling regions; and

means responsive to the output of said waveguide pairs for comparing the output of both waveguides of said waveguide pairs and providing a digitized signal therefrom.

4,325,604

INPUT AND OUTPUT COUPLER DEVICE

Hans-H. Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

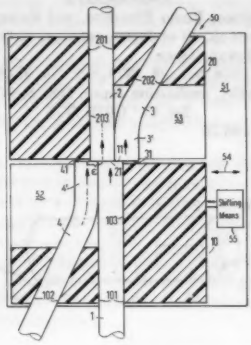
Filed Aug. 20, 1979, Ser. No. 68,218

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842276

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.15 **9 Claims**

1. A coupler for use with light conducting fibers to couple-out and couple-in a light signal to the fibers, said coupler comprising at least first, second and third optical fibers; and first and second means for holding said fibers in a plane, said first means having first and second guide channels extending toward each other in a carrier body and not merging, said first means having a stop surface adjacent an end of the first guide channel and aligned with a side thereof, said first and second fibers being disposed in said channels with an end portion extending therefrom and the first and second fibers converging together with the second fiber holding the first fiber against said stop surface with the first fiber being straight and to have a portion of ech of said fibers adjacent the end faces extending in axis parallel side-by-side relationship due to the elastic fiber deformation and with the end faces being flush, and said second means for holding at least having a carrier body with a third guide channel for the third fiber, said third fiber being disposed in the guide channel with its end face at least partially opposite the end faces of the first and second fibers, each of



said guide channels being a groove in a surface of the respective carrier body.

4,325,605

BRANCHING ELEMENT FOR MONOMODE LIGHT WAVEGUIDES AND THE METHOD OF MANUFACTURE

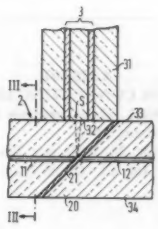
Gerhard Winzer, and Franz Auracher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,357

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851667

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.15 **3 Claims**



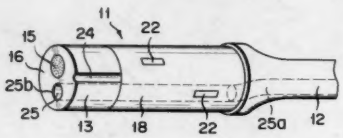
1. A branching element for the purpose of coupling out a light component from a monomode light waveguide, said branching element comprising a structure including two monomode light waveguides each being a monomode fiber with a light conducting part and having an end surface, a first member mounting said monomode waveguides in axial alignment with the end surfaces being separated by a semi-transmissive reflective layer provided in the member and extending obliquely to the axis of said waveguides; and a multi-mode light waveguide being a multimode fiber having an end surface and having a light conducting part with a cross-section being considerably greater than the cross-section of the light conducting part of the monomode fibers, said multimode waveguide being received in an additional member, said additional member being mounted directly on the first member with the end face of the multimode waveguide being directly positioned on a surface of the first member in a location for receiving light decoupled from one of the pair of monomode waveguides by the semi-transmissive reflective layer, said additional member positioning the multimode waveguide to extend at an angle to said monomode waveguides with said angle being bisected by a surface normal of the reflective layer.

4,325,606

CONNECTOR FOR A LIGHT GUIDE CABLE OF AN ENDOSCOPE

Yuji Ikuno, Hino; Kunio Kinoshita, and Katsuyuki Kanehira, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,055
Claims priority, application Japan, Dec. 8, 1978, 53/151679
Int. Cl.[3] G02B 7/26
U.S. Cl. 350—96.20 25 Claims



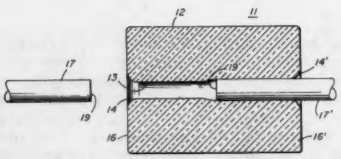
1. A connector for a light guide cable of an endoscope, comprising a connector body received in that hole of a receptacle which has a complementary shape to the connector body and having two ends, one end being connected to a light guide cable of an endoscope and the other end being flush with a light-receiving face of a light guide which is inserted in the connector body and extends through the light guide cable; an electrically insulating member surrounding the connector body and having an outer periphery; and contacts embedded in the insulating member, having each an outer surface substantially flush with the outer periphery of the insulating member and connected to lead wires which axially extend in the insulating member and through the light guide cable, and wherein at least one fluid passage extending parallel to said light guide is formed in said connector body.

4,325,607

APPARATUS FOR CONNECTING OPTICAL FIBERS

W. John Carlsen, Natick, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 26, 1979, Ser. No. 23,862
Int. Cl.[3] G02B 7/26
U.S. Cl. 350—96.21 18 Claims



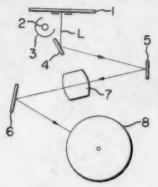
1. In combination,
a first optical fiber having a first outer diameter;
a second optical fiber having a second outer diameter; and
a molded cylindrical piece of elastic material having an axial hole of a third diameter from one end of said piece to another end thereof;
said first fiber being inserted part-way through said axial hole of said piece from said one end thereof;
said second fiber being inserted part-way through said axial hole of said piece from said another end thereof;
wherein, prior to insertion of said fibers, said third diameter is smaller than said first diameter and said second diameter.

4,325,608

OPTICAL SYSTEM OF A COPYING MACHINE

Osamu Kamiya, Machida, and Nobuyuki Sekimura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,509
Claims priority, application Japan, Nov. 10, 1978, 53/138442
Int. Cl.[3] G02B 1/10, 5/28
U.S. Cl. 350—165 9 Claims



1. An optical system for use in a copier comprising:
a lamp for illuminating an original;
a Cds photosensitive member; and
a transmitting type projection lens system comprising a lens surface including a multi-layered interference coating formed on a substrate, said interference coating being a 5- or 7-layered structure composed of alternately superposed high refractive layers and low-refractive layers each having a basic optical thickness equal to $\frac{1}{4}$ of a design wavelength λ_0 and, including therein, two and one adjusting layers at the substrate side and the air side, respectively, of said coating to prevent transmission in the near-infrared wavelength region to thereby match the spectral characteristics of the light reflected from an original with the spectral sensitivity of said photosensitive member, wherein the optical thickness ND_i of an ith layer (from 1 to k), counted from the substrate side, satisfies the following relation:

$$ND_1=ND_k>ND_2>ND_3=ND_4=ND_{k-1}$$

where k represents the number of layers of said multi-layered interference coating.

4,325,609

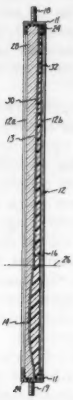
VEHICLE SAFETY MIRROR

Steven D. Alford, 426 Birch Rd., Wyoming, Minn. 55092

Filed Mar. 7, 1980, Ser. No. 128,110
Int. Cl.[3] G02B 5/10; B60R 1/08
U.S. Cl. 350—293 15 Claims

1. A two-way exterior mirror device for a motor vehicle comprising;
a substantially open frame for holding mirrors, including mounting means for mounting said frame on the exterior of the vehicle;
a semi-transparent plane mirror mounted in said frame and positioned to permit viewing through said mirror and reverse reflected off said mirror;
a semi-transparent convex mirror mounted in said frame and positioned to permit viewing through said mirror and an enlarged field of view reverse reflected off said convex mirror; and
transparent backing means attached to said frame for hold-

ing said plane mirror and said convex mirror such that viewing through said mirror is through said backing



means, said backing means being made of a high impact resistant transparent plastic material.

4,325,610

SEALING AGENT FOR PLASTIC LIQUID CRYSTAL DISPLAY PANELS

Hiroshi Inoue, Ena, Japan, assignor to Ricoh Watch Co., Ltd., Aichi, Japan

PCT No. PCT/JP80/00013, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 30, 1980, PCT Pub. No. WO80/01613, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 29, 1980, Ser. No. 214,003

Claims priority, application Japan, Feb. 1, 1979, 54-10909; Aug. 16, 1979, 54-104417; Oct. 12, 1979, 54-131984

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—343 **6 Claims**

1. A method of sealing a liquid crystal display panel comprising:

applying sealant to at least one of separated upper and lower transparent plastic panel substrates, drying said sealant to effect preliminary solidification of said sealant,

depositing a liquid crystal within one of the panel substrates,

hot press sealing the two panel substrates and curing the sealed portion at a temperature above the melting point of the plastic substrates but below the thermal deformation temperature of the substrates.

2. The sealing method of claim 1, wherein the sealant for the plastic liquid crystal display panels comprises the following three components:

(a) nylon and/or a linear saturated polyester;

(b) an epoxy resin and/or an isocyanate compound; and

(c) a solvent which can dissolve the components (a) and (b), and can also dissolve said transparent plastic panel substrates.

4,325,611

ELECTROCHROMIC MATERIAL AND ELECTRO-OPTICAL DISPLAY USING SAME

Robert A. Huggins, Stanford, and Ian D. Raistrick, Menlo Park, both of Calif., assignors to Stanford University, Stanford, Calif.

Filed Dec. 26, 1979, Ser. No. 106,547

Int. Cl.³ G02F *1/17, 1/23;* C09K *3/00*

U.S. Cl. 350—357 **12 Claims**

1. An electro-optical device comprising

an optically transparent substrate,

an optically transparent electrode formed on a surface of said substrate,

a second electrode in spaced alignment with said optically transparent electrode, said second electrode comprising an electro-active material,

an electrochromic material supported by said substrate and positioned between said electrodes, said electrochromic material comprising an oxide of at least one transition metal having the hexagonal tungsten bronze crystal structure,

an electrolyte between and contacting said electrochromic material and said second electrode, said electrolyte being conductive of ions of said electroactive material between said second electrode and the crystal structure of said electrochromic material, and

an ionic species in said crystal structure of said electrochromic material whereby said electrochromic material changes color when ions of said electroactive material are in said crystal structure.

4,325,612

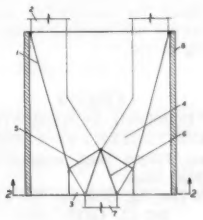
REFLECTIVE BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed May 6, 1981, Ser. No. 260,582

Int. Cl.³ G02B *13/18, 17/08*

U.S. Cl. 350—432 **1 Claim**



1. A reflective beam concentrator consisting of an annular concave mirror and a conical lens mounted inside a casing and aligned on a common axis which is parallel to light rays entering and exiting the concentrator, with all surfaces of the mirror and lens not used for the reflection, transmission and refraction of light rays being opaque;

(a) with the annular concave conical mirror having a concave reflective surface which receives parallel solar rays and reflects these rays inward to the conical lens,

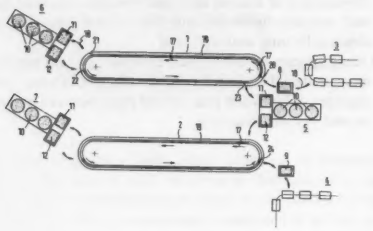
(b) with the conical lens having a convex conical section which receives parallel rays reflected from the concave reflective surface of the annular concave conical mirror and transmits these rays in a straight line through the conical lens,

(c) with the conical lens having a concave conical section which receives parallel rays transmitted from the convex conical section of the conical lens and refracts these rays out of the conical lens in a direction parallel to the common axis of the annular concave conical mirror and conical lens.

4,325,613
ARRANGEMENT FOR MAKING COLOR-PICTURE TUBES

Robert Friedrich, Hochdorf, and Peter Schmidt, Denkendorf, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,589
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941550
Int. Cl.³ G03B *41/00*; H01J *9/00*
U.S. Cl. 354—1 **5 Claims**

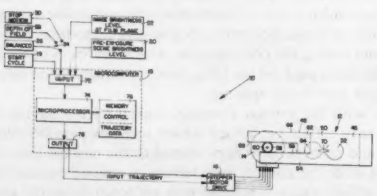


1. A self-contained exposing module for use with an arrangement for depositing photosensitive coatings on color picture tube faceplates, developing said coatings after exposure to light through masks, and conveying said faceplates and masks between a plurality of said modules, wherein said module is removable as a unit from said arrangement and comprises:
inserting means for assembling a color picture tube faceplate having a photosensitive coating thereon and a mask, delivered to said module from said arrangement, into a faceplate-mask assembly;
exposing means for exposing said faceplate-mask assembly to light;
removing means for disassembling said exposed faceplate and mask for delivery thereof to said arrangement; and
transporting means for transporting said faceplate mask assembly between said exposing means and said inserting and removing means.

4,325,614
EXPOSURE CONTROL SYSTEM WITH SHUTTER OPERATION CONTROLLED BY A MICROCOMPUTER

Donald L. Grimes, Milford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1980, Ser. No. 216,831
Int. Cl.³ G03B *7/097*
U.S. Cl. 354—23 D **5 Claims**

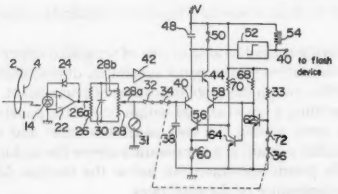


1. An exposure control system usable in photographic apparatus for controlling transmission of image-forming light rays from a scene to a film unit in a film plane, said system comprising:
a blade mechanism;
means for mounting said blade mechanism for displacement between a first arrangement wherein it blocks transmission of scene light to the film plane and a second arrangement wherein it defines a maximum aperture, said blade mechanism serving to define a range of progressively increasing sized apertures as it moves from its said first arrangement towards its said second arrangement and then a range of progressively decreasing sized apertures as it returns to its said first arrangement for unblocking transmission of scene light to the film plane during an exposure interval;
means including a stepper motor responsive to a program of trajectory signals for driving said blade mechanism in a manner whereby its operation is characterized by an aperture size versus time trajectory curve defined by said program of trajectory signals;
means for storing at least characterizing elements of a plurality of different trajectory signal programs defining corresponding trajectory curves that are appropriate for differing photographic conditions, including at least one trajectory signal program that causes the rate of blade mechanism drive to vary during the course of an exposure interval so that the corresponding trajectory curve has at least one non-linear portion; and
electrical circuit means responsive to one or more electrical input signals indicative of pre-exposure photographic conditions or of photographic conditions ascertained during the course of an exposure interval for selecting appropriate characterizing elements from said storage means and therefrom developing and feeding a correlated program of trajectory signals to said blade mechanism driving means.

4,325,615
EXPOSURE CONTROL SYSTEM FOR SINGLE LENS REFLEX CAMERAS

Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 62,507, Jul. 31, 1979, Pat. No. 4,284,341. This application Apr. 27, 1981, Ser. No. 258,027
Claims priority, application Japan, Aug. 9, 1978, 53-96847
Int. Cl.³ G03B *7/083, 7/099, 15/05*
U.S. Cl. 354—24 **8 Claims**



1. In a single lens reflex camera, the combination comprising:
a reflex mirror movable between viewing and photographic positions and having a portion enabling light passage;
light receiving means for receiving scene light through said reflex mirror portion with said reflex mirror in said viewing position and receiving scene light reflected from the film in the camera with said reflex mirror in said photographic position;
a light measurement means for generating a light measurement signal output as a function of the scene light received by said light receiving means;
flash control means for controlling the termination of electronic flash tube firing in accordance with the light measurement signal generated with said reflex mirror in said photographic position;
storage means for storing said light measurement signal output;
means for causing the storing operation of said storage means in response to an arbitrary manual operation independent of camera actuating operation, with said reflex mirror in said viewing position; and

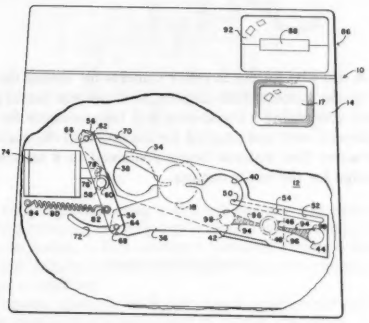
exposure time control means for controlling exposure time in accordance with the light measurement signal stored in said storage means.

4,325,616

APPARATUS FOR VARYING THE SPECTRAL FILTER OVER THE PHOTOCELL AS A FUNCTION OF BLADE POSITION

Milton S. Dietz, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 10, 1980, Ser. No. 110,811
Int. Cl.³ G03B *7/14, 7/18*
U.S. Cl. 354—27 **12 Claims**



1. In a photographic camera apparatus including means for mounting photographic film material at a given focal plane; a light exposure opening for allowing passage of light to the film; detecting means for evaluating scene light; a blade mechanism mounted for displacement between a first and second position; said blade mechanism precluding passage of scene light through said exposure opening when in said first position and defining changing primary aperture values over said exposure opening and changing secondary aperture values over said detecting means as said blade mechanism moves toward said second position; and drive means actuatable for initially displacing said blade mechanism from said first position toward said second position and, in response to the amount of scene light detected by said detecting means, for returning said blade mechanism to said first position, the improvement comprising:

filtering means responsive to displacement of said blade mechanism for automatically precluding transmission of selected frequencies of scene light to said detecting means during at least one portion of said displacement of said blade mechanism toward said second position while transmitting other spectral frequencies thereto and for transmitting said selected frequencies to said detecting means during another portion of said displacement, said filtering means includes a spectral filter coupled to said blade mechanism so as to be operatively positioned over said detecting means during said one portion of said displacement and inoperatively spaced away from said detecting means during said other portion thereof.

4,325,617

CAMERA EXPOSURE CONTROL DEVICE

Masayoshi Sahara, Sennan, and Nobuyuki Taniguchi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

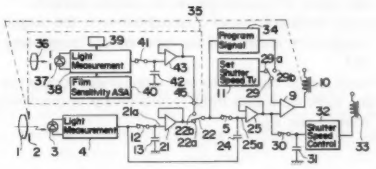
Filed Apr. 14, 1980, Ser. No. 139,683
Claims priority, application Japan, Apr. 18, 1979, 54/48298
Int. Cl.³ G03B *7/087*
U.S. Cl. 354—31 **13 Claims**

1. In a camera which includes an objective and a diaphragm capable of being stopped-down from its fully open aperture in response to a camera release operation, an exposure control device comprising:

first light measuring means for measuring light having passed through said objective and the aperture of said diaphragm and generating an output commensurate with the intensity of the measured light, said output generated at a desired time prior to a camera release operation being a first signal S_1, said output generated immediately prior to commencement of stopping-down operation of said diaphragm being a second signal S_2, and said output generated in the course of stopping-down operation of said diaphragm being a third signal S_3 wherein said third signal S_3 varies as said diaphragm is stopped-down;

means for generating a fourth signal S_4 commensurate with a preselected shutter speed;

means for arresting said diaphragm;



diaphragm control means for calculating with said first to fourth signals S_1 to S_4 and generating an actuating signal for actuating said arresting means when said first to fourth signals S_1 to S_4 satisfy the general formula of $S_4=S_1-S_2+S_3$ as a result of the variation of said third signal due to the stopping-down operation of said diaphragm, said diaphragm arresting means having a delayed response to complete the arresting of said diaphragm from the time of generation of said actuating signal by said diaphragm control means; and

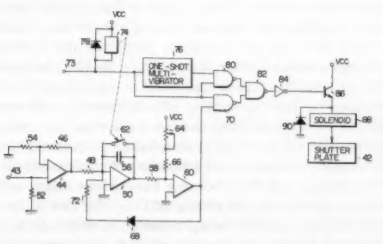
shutter speed control means for calculating with said first and second signals S_1, S_2 and output S_3' of said first light measuring means generated after completion of the arresting of said diaphragm and controlling a shutter speed in accordance with the calculation results $S_1-S_2+S_3'$.

4,325,618

LIGHT SOURCE APPARATUS

Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,840
Claims priority, application Japan, Sep. 17, 1979, 54-17867
Int. Cl.³ G03B *7/16, 29/00*
U.S. Cl. 354—33 **16 Claims**



1. In a light source apparatus for a camera for photographing a dark scene, producing a synchronizing signal during the shutter operation of the camera, receiving light reflected from the scene and producing a light reception signal corresponding to the received light,

the improvement comprising the combination of:

a synchronizing terminal for receiving said synchronizing signal from the camera;

a light reception terminal for receiving said light reception signal from the camera;

light source means coupled to said synchronizing terminal and producing light for illuminating the scene responsive to said synchronizing signal;

integrating means coupled to said synchronizing terminal and to said light reception terminal for calculating the received light dose by integrating said light reception signal according to said synchronizing signal to produce an integration signal corresponding to said received light dose at an output of the integrating means;

comparator means coupled to said integrating means for comparing said integration signal and a predetermined signal, and to produce a comparison signal according to the result of comparison at an output thereof;

positive feedback means coupled between the output of said comparator means and the input of said integrating means; and

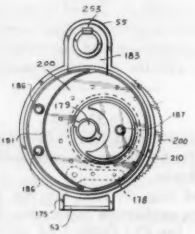
shutter means coupled to said comparator means for blocking light from said light source means responsive to said comparison signal.

4,325,619

CAMERA

Bernard A. Seckendorf, Flushing, and Jack W. Kalbfeld, Old Bethpage, both of N.Y., assignors to Wrist-A-Matic, Ltd., Elmhurst, N.Y.

Filed Nov. 7, 1980, Ser. No. 205,209
Int. Cl.³ G03B *19/02, 17/26, 9/10*
U.S. Cl. 354—121 **25 Claims**



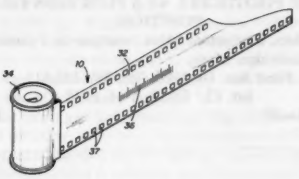
1. In a camera having a housing and a film cassette rotatably mounted therein, said cassette having means for holding a disc-shaped film therein in a plane perpendicular to the axis thereof, said camera further comprising a shutter assembly for enabling exposure of film in said cassette, and means for rotating said cassette from externally of said housing, said housing including a cassette housing having a chamber for receiving the cassette and a front housing coupled to the cassette housing so as to enable the loading and unloading of said cassette in said cassette housing, said front housing having lens means with an optical axis parallel to and displaced from the axis of the cassette, the shutter assembly being mounted in said front housing to selectively block the passage of light between said lens means and said cassette; the improvement wherein said cassette has an element with gear teeth, and said means for rotating said cassette from externally of said housing comprises an internal ring gear having internal teeth engaging the teeth of the element of said cassette, the rim of said internal ring gear extending, on at least one side of said camera, beyond said cassette housing.

4,325,620

FILM AND METHOD FOR TESTING CAMERAS

Gary R. Holley, 220 Bryan Pl., Mesquite, Tex. 75149

Filed Oct. 28, 1980, Ser. No. 202,016
Int. Cl.³ G03B *15/02, 17/26*
U.S. Cl. 354—127 **10 Claims**



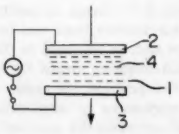
1. A test film for use in reflex cameras for testing the operation of the camera with respect to focus and picture image quality comprising a translucent and fully reusable film material dimensioned and adapted for loading into the camera, the translucent film material being contained in a standard film cartridge for the reflex camera.

4,325,621

ELECTRONIC FLASH DEVICE

Hiroshi Iwata, Nara, and Tetsuo Yamaoka, Osaka, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed May 14, 1981, Ser. No. 263,580
Claims priority, application Japan, May 16, 1980, 55/65593
Int. Cl.³ G03B *15/03, 17/00*
U.S. Cl. 354—145 **4 Claims**



1. An electronic flash device of the type in which a liquid crystal plate is disposed in front of a flash unit comprising a flash bulb for converting the energy stored on a main flash capacitor into a flash of light and a reflector, characterized by the provision of

a voltage application control device comprising a photographic lens detection means for detecting the type; that is, the focal length of a photographic lens attached to a camera body and generating an output signal representative of said type of said photographic lens attached,

a switching means whose state is controlled in response to the output signal from said photographic lens detection means, and

a driving voltage generator for generating a voltage for driving said liquid crystal plate, comprising

a voltage detector for detecting a voltage generated in said electronic flash device,

a voltage conversion means for converting the voltage into a driving voltage for driving said liquid crystal plate,

whereby the application of said driving voltage to said liquid crystal plate is controlled by said switching means.

4,325,622
COUPLING FILM ADVANCE AND SHUTTER RELEASE FOR A STILL CAMERA

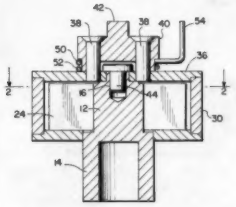
Hansjürgen Hartung, Wolfenbüttel, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke GmbH & Co. KG, Brunswick, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 207,881

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948525

Int. Cl.³ G03B *1/12, 1/00*

U.S. Cl. 354—170 **17 Claims**



1. A coupling connecting a drive motor to a still camera to facilitate automated cocking and actuation of said camera, said camera including a film transport advance drum, a shutter release and a shutter release mechanism and a drive motor, said coupling comprising:

cam means, rotatable with one of said drive motor and said film transport advance drum in a drive direction;

cam biassing means, rotatable with the other of said drive motor and said film transport advance drum, said cam biassing means includes means for transmitting torque from said drive motor to said film transport advance drum, said transmitting means rotating with said cam means until a predetermined maximum torque is reached, said transmitting means driving said cam biassing means a predetermined distance in a direction opposite to said drive direction when said maximum torque is exceeded, said predetermined distance determined by said cam means; and

shutter coupling means, responsive to said cam biassing means movement in said direction opposite to said drive direction, for actuating said shutter release mechanism, said actuating means freely rotatable in said drive direction with respect to said cam biassing means and fixed against rotation in said direction opposite to said drive direction with respect to said cam biassing means.

4,325,623
SHUTTER SPEED DISPLAY DEVICE

Koji Suzuki, Asaka, and Eiichi Tano, Kamifukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

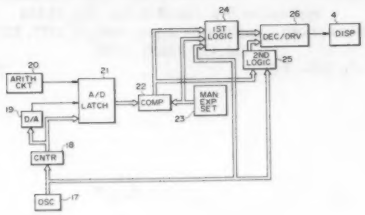
Filed Oct. 21, 1980, Ser. No. 198,997

Claims priority, application Japan, Nov. 30, 1979, 54/155174

Int. Cl.³ G03B *17/20*

U.S. Cl. 354—289 **8 Claims**

1. A shutter speed display device for a camera comprising: a display unit having a plurality of light emitting display elements, each having an anode and a cathode, which are provided respectively corresponding to a plurality of shutter speed indicating numerals in a viewfinder of said camera, said light emitting elements being divided into a predetermined number of groups of ordered light emitting elements, one of said anodes and cathodes of said light emitting elements in each group being connected together, the other of said anodes and cathodes of said light emitting elements in each of said groups being connected to the other of said anodes and cathodes of like-ordered ones of said light emitting elements in the other of said groups; a decoder and driver circuit means for driving said display unit; oscillator circuit means providing a periodic clock signal alternating between a first state and a second state; and logic circuit means, coupled between said oscillator circuit means and said decoder and driver circuit means, responsive to said clock signal for alternately applying to said decoder and driver circuit means in a time division manner (1) a first signal representing a manually set shutter speed and (2) a second comparison signal representing the value of said set shutter



speed relative to a calculated correct value of shutter speed, whereby a corresponding one of a first set of said display elements indicates the set shutter speed when said first signal is applied, and whereby, when said second signal is applied, another one of a second set of two predetermined display elements indicates whether the set shutter speed value is above or below said calculated value.

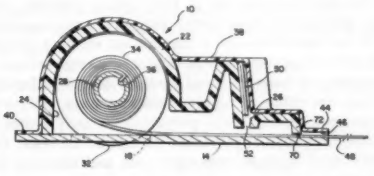
4,325,624
SELF-DEVELOPING TYPE FILM PROCESSOR KIT

Walter E. Pedroli, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1980, Ser. No. 183,014

Int. Cl.³ G03D *5/02, 5/06*

U.S. Cl. 354—304 **22 Claims**



1. A kit adapted for use in a film processor wherein it is adapted for use with an exposed roll of instant type film to initiate the formation of visible images in the film, comprising:

means for housing a supply of flexible sheet material,

means for defining a reservoir for containing a supply of processing liquid;

a supply of processing liquid located in said reservoir;

means for supporting said housing and said reservoir;

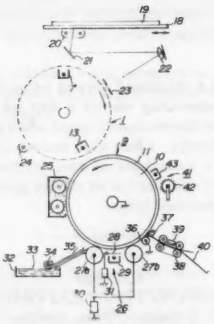
means for substantially enclosing said housing and said reservoir, said enclosing means cooperating with said supporting means to define an opening through which an end of a flexible sheet material may extend to the exterior of said kit; and

a supply of flexible sheet material supported within said housing with one free end of said sheet material extending between said supporting means and said reservoir, whereat a coating of said processing liquid is adapted to be applied to said sheet material, and then to the outside of said kit via said opening, whereby said free end may be used to progressively withdraw said sheet material from said kit in a coated condition such that it may be superposed with an exposed strip of photographic film so as to initiate the formation of visible images in the film.

4,325,625
ELECTROPHOTOGRAPHING METHOD

Toshio Nakatsubo; Kaoru Ohyoshi; Masaji Nishikawa, all of Hachioji; Eiichi Sato, Tama; Norio Mizukami; Akira Shimizu, both of Tokyo; Kazuhisa Yanagisawa, Mitaka; Kenichi Oinoue, Tokyo; Naotsune Tsuda, and Yoshiro Suzuki, both of Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 883,258, Mar. 3, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,834
Claims priority, application Japan, Mar. 7, 1977, 52/23744
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 SC 7 Claims



1. An improved method of electrophotographing, employing an apparatus having a sensitizing screen with a great number of fine apertures and a transferring member including a conductive base plate and at least one charge storage layer formed on said base plate and made of material selected from a group consisting of highly insulating glass, polyurethane, acrylic resin, epoxy resin, polyethylene, polystyrene, vinyl chloride resin, nylon, polyimide resin, silicone resin, fluorine plastics, allyl diglycol carbonate resin and mixtures thereof, comprising

(a) a step of forming on said sensitizing screen a primary electrostatic latent image corresponding to an image of a document to be copied;

(b) a step of forming on said transferring member a secondary electrostatic latent image corresponding to said primary latent image by projecting through said sensitizing screen a corona ion flow modulated by said primary latent image onto said transferring member;

(c) a step of developing said secondary latent image with toners to form a toned image;

(d) a step of transferring said toned image onto a recording sheet to form a duplicated copy;

(e) a step of repeatedly conducting said steps (c) and (d) in succession by a number M of times to form a number M of duplicated copies, said number M being the maximum number of copies which can be formed from one and the same secondary latent image;

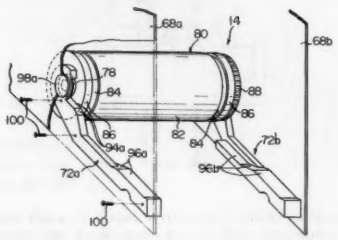
(f) a step of erasing said secondary latent image; and

(g) a step of repeatedly conducting said steps (b) to (f) in succession by a number N of times to form a total of M×N number of duplicated copies from one and the same primary latent image once formed on said sensitizing screen.

4,325,626
ELECTROSTATIC COPYING APPARATUS

Naoaki Murata, Takarazuka; Masahiro Yoshioka, Matsubara; Kiyoshi Hayashi, Takatsuki, and Yasusuke Tohi, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1979, Ser. No. 99,720
Claims priority, application Japan, Dec. 13, 1978, 53-153203; Feb. 2, 1979, 54-10304; Mar. 29, 1979, 54-41643[U]; Apr. 5, 1979, 54-40302; May 25, 1979, 54-70992[U]; May 25, 1979, 54-70993[U]; May 25, 1979, 54-70994[U]; May 25, 1979, 54-70995[U]
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 DR 4 Claims



1. An electrostatic copying apparatus of the type in which a rotary drum having a photosensitive member on its surface is rotatably and detachably disposed at a predetermined location within a housing, said apparatus comprising a pair of inner side plates spaced apart from each other in the direction of the central axial line of rotation of said rotary drum, a guide and support member mounted at a predetermined location on the inside surface of each of said side plates, and formed in each said guide and support member, a bearing hole having a recess opened in a direction substantially perpendicular to said central axial line of rotation and at least one guide surface extending from said recess of said bearing hole in a direction substantially perpendicular to said central axial line of rotation, whereby when a selected site of each of both side portions of said rotary drum is moved along each said guide surface, each of said side portions of said rotary drum is positioned within each said bearing hole through each said recess to mount, said rotary drum rotatably and detachably in the direction substantially perpendicular to said central axial line of rotation.

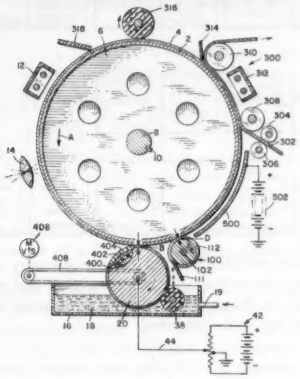
4,325,627
METHOD AND APPARATUS FOR LIQUID-DEVELOPING LATENT ELECTROSTATIC IMAGES

Ronald Swidler, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,030
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 3 Claims

3. In an apparatus for making copies of a document by electrophotography, a rotatable conductive drum, a photoconductor carried by said drum, means for charging the photoconductor, exposing means for subjecting the charged photoconductor to a light image of a document to be copied to form a latent electrostatic image on said drum; the improvement comprising a tank for holding developer carrier liquid having charged toner particles disseminated therethrough, a rotary electrode, means for mounting said rotary electrode with its lower segment immersed in said carrier liquid and for spacing its uppermost segment from the photoconductor to form a gap therewith of between three and six mils at its closest approach to the photoconductor, means for biasing said rotary electrode to prevent toner deposition on the non-image areas of the latent electrostatic image formed on the photoconductor, means for

controlling the speed of rotation of said rotary electrode to control the volume of developer liquid carried thereby from the tank to said gap, a reversely rotating metering roller for removing a portion of the carrier liquid from the developed image on the photoconductive surface, means for transferring



the developed image to a carrier sheet, an arcuate field electrode closely spaced from the photoconductive surface and positioned between said metering roller and said transferring means, and means for biasing said field electrode to a polarity having a sign opposite to the polarity of the charge of said charged toner particles.

4,325,628

CLEANING DEVICE FOR AN IMAGE FORMING APPARATUS

Akiyoshi Torigai, Machida; Teruo Morikawa, Sagamihara; Masaki Nakaoka, Tokyo; Shinji Murata, Tokyo, and Yoshiaki Sone, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,867

Claims priority, application Japan, Nov. 30, 1978, 53-147215

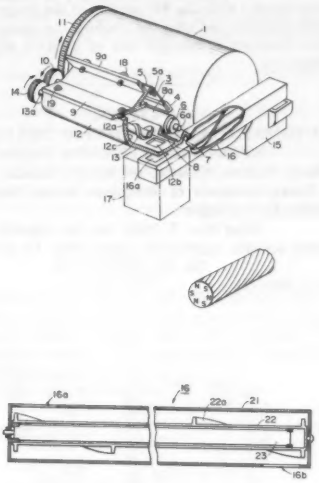
Int. Cl.[3] G03G *21/00*

U.S. Cl. 355—15 **4 Claims**

2. A cleaning device for an image forming apparatus, wherein a magnetic developer image formed on the surface of an image bearing member is transferred onto an image transfer material, said device comprising:

cleaning means to remove the magnetic developer remaining on the surface of the image bearing member after transfer;

transfer means for conveying the developer removed by said cleaning means to a removed developer collecting zone, wherein said developer transfer means comprises a non-



magnetic screw and a magnetic roll in the interior of said screw.

4,325,629

IMAGE FORMING METHOD AND APPARATUS THEREFOR

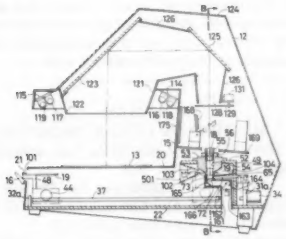
Takashi Ogata; Makoto Gonmori, and Kenji Matano, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 212,966

Claims priority, application Japan, Dec. 7, 1979, 54-158156

Int. Cl.[3] G03B *27/32, 27/42*

U.S. Cl. 355—27 **30 Claims**



1. An image forming method for forming an image, using an image forming sheet which has on an organic substrate a heat-developable image forming layer that is normally non-photosensitive but is rendered photosensitive by preheating prior to exposure and forms therein a latent image by exposure and then provides a visible image by heat development, characterized in that, in order to prevent an image forming area of the image forming sheet from heat deformation by heating for the preheating or heat development, the image forming area is heated by heating means, holding the opposite side from the image forming layer corresponding to the image forming area in close contact with a flat portion of an image forming area

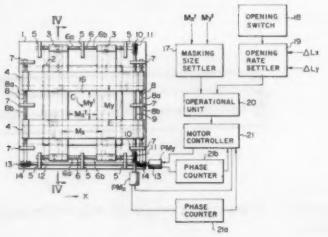
support member in a manner to extend over the entire area of the flat portion; after the heating, the image forming area is cooled down to a temperature below the glass transition point of the organic substrate, still holding the opposite side from the image forming layer corresponding to the image forming area in close contact with the flat portion of the image forming area support member; and after the cooling, the image forming area support member is brought out of contact with the image forming area.

4,325,630

AUTOMATIC MASKING DEVICE INCLUDING AN APERTURE EXTENSION MEANS

Yoshikazu Kimura, Kusatsu, and Kenjiro Tanabe, Hikone, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 7, 1980, Ser. No. 128,035
Claims priority, application Japan, Mar. 19, 1979, 54-32086
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—74 **6 Claims**



1. An automatic masking device for use in a printer, comprising:

a photosensitive film sheet holder on which a photosensitive film sheet is to be held;

a pair of masking plates which are arranged in front of the photosensitive film sheet holder, and are adapted to be movable over the surface of the holder so as to open and close an aperture between the masking plates, and which are adapted to be set to form an aperture of a predetermined size; and

an aperture extending means which is capable of temporarily extending the aperture beyond the predetermined size to enable the operator to visually check the marginal area surrounding said aperture of predetermined size prior to making the exposure, and of then automatically returning the aperture to the predetermined size.

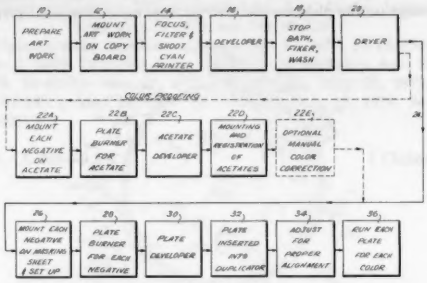
4,325,631

METHOD OF COLOR PRINTING

Francis E. McCullion, Jr., Colts Neck, N.J., assignor to Cymaticolor Corporation, Edison, N.J.

Filed Nov. 7, 1980, Ser. No. 204,959
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **11 Claims**

1. A method of reproducing on stock a color original having multiple basic color components, including the steps of mounting said original on a movable surface, focusing a lens system on said original, inserting a selected filter into said lens system for allowing the transmission therethrough of respective subtractive colors in said original, inserting a film member into said lens system for each of said basic color components, exposing each said film member through a respective one of said filters, preparing a film negative for each of said subtractive colors and corresponding to each said exposure, mounting each said negative in conjunction with a corresponding plate member, exposing said plate member to light through each corresponding negative to selectively prepare said plate member for reproduction of a component image portion of said original, sequentially inserting each said plate member into a duplicator machine, applying water and correspondingly colored ink to the plate cylinder of said duplicator with each said


PREPARE ART WORK
MOUNT ART WORK ON COPY BOARD
FOCUS, FILTER & SHOOT CYAN PRINTER
DEVELOPER
STOP BATH, FIXER, WASH
DRYER
SOLID PROOFING
MOUNT EACH NEGATIVE ON ACETATE
PLATE BURNER FOR ACETATE
ACETATE DEVELOPER
MOUNTING AND REGISTRATION OF ACETATES
OPTIONAL MANUAL COLOR CORRECTION
MOUNT EACH NEGATIVE ON MASKING SHEET & SET UP
PLATE BURNER FOR EACH NEGATIVE
PLATE DEVELOPER
PLATE INSERTED INTO DUPLICATOR
ADJUST FOR PROPER ALIGNMENT
RUN EACH PLATE FOR EACH COLOR

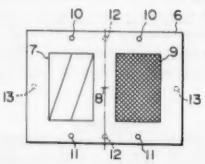
respective plate member inserted therein, operating said duplicator to apply respective color components of said original to said stock in sequence and collecting said stock after said reproduction has been completed.

4,325,632

METHOD OF PHOTOGRAPHIC PRINTING AND A PHOTOGRAPHIC ORIGINAL PLATE FOR USE THEREIN

Kikuro Tsuji, Joyo, and Masaya Ishigaki, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha and Kabushiki Kaisha Dai-ichi Shiko, both of Kyoto, Japan

Filed Dec. 8, 1980, Ser. No. 213,719
Claims priority, application Japan, Dec. 18, 1979, 54-163516
Int. Cl.³ G03B *27/04*
U.S. Cl. 355—86 **6 Claims**



1. A method for photographically printing an identical picture on each of two areas defined on a photosensitive material such that these two areas are located 180 degrees apart from each other about a point of symmetry, comprising:

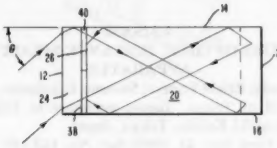
a first printing step in which the photosensitive material is exposed to light with a transparent sheet, carrying thereon an original picture image and a light shielding area, closely overlayed thereon in such a manner that the original picture image and the light shielding area are generally registered over the two areas defined on the photosensitive material 180 degrees apart from each other about a point of symmetry, respectively, and

a second printing step in which the photosensitive material is exposed to light with the transparent sheet closely overlayed thereon after changing the positions of the original picture image and the light shielding area one another in such a manner that each of the original picture image and the light shielding area is registered over the other one of the two areas on the photosensitive material.

4,325,633
APPARATUS FOR DETERMINING OF ANGLE OF INCIDENCE OF ELECTROMAGNETIC ENERGY

Leland V. Gardner, Buellton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 2, 1980, Ser. No. 155,887
Int. Cl.³ G01B *11/26;* G02B *5/14*
U.S. Cl. 356—141 **10 Claims**



1. A receiver for providing an electrical signal corresponding to the angle of incidence of electromagnetic energy comprising:

a first planar surface for producing an input aperture;

second and third planar surfaces extending normally from said first planar surface so as to partially define a chamber therebetween, said second and third surfaces providing reflective interior side walls for said chamber;

a fourth planar surface extending substantially normally from said first, second and third surfaces which defines the interior ceiling of said chamber;

a fifth planar surface extending substantially normally from said first, second and third surfaces which defines the floor of said chamber;

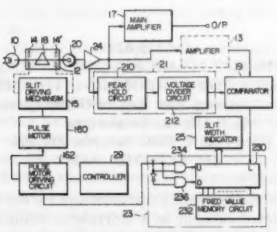
a sixth surface joining said second, third, fourth and fifth surfaces to define the rear wall of said chamber, said sixth surface having a reflective side and being curved about an axis perpendicular to said second and third surfaces whereby electromagnetic energy which passes through said input aperture is reflected and focused by said sixth surface to a line image along which the radiant power distribution is proportional to the angle of incidence of said energy relative to said first surface; and

detector means mounted on one of said surfaces parallel to said line image so as to measure the radiant power distribution thereof and thereby develop an electrical signal corresponding to the angle of incidence of electromagnetic energy.

4,325,634
SLIT WIDTH CALIBRATOR FOR MONOCHROMATOR

Shigeo Tohyama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 89,084
Claims priority, application Japan, Nov. 2, 1978, 53-134561
Int. Cl.³ G01J *3/12, 3/18*
U.S. Cl. 356—331 **16 Claims**



1. A slit width calibrator for a monochromator having a light source and a slit having a variable slit width for picking up a monochromatic light of a desired wavelength from the light generated from said light source, comprising:

a light detector for detecting the light emitted through said slid, said light detector providing a maximum value output corresponding to a maximum slit width;

controlling means for changing the width of said slit and generating pulses in a number corresponding to the change in slit width;

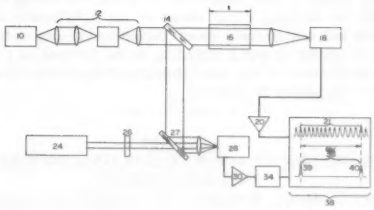
counting means for counting the pulses generated from said controlling means; and

calibrating means for calibrating the content of said counting means to a fixed value corresponding to a predetermined width of said slit at the time when a ratio of the output of said light detector to the maximum value thereof reaches a predetermined value dependent of said predetermined slit width while changing the slit width by said controlling means.

4,325,635
HETERODYNE INDICIAL REFRACTOMETER

Joseph P. Sattler; Terrance L. Worchesky, both of Silver Spring, and Kenneth J. Ritter, Adelphi, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 7, 1980, Ser. No. 194,736
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—349 **12 Claims**



1. A method of measuring the index of refraction of a material which comprises the steps of:

obtaining a first beam of radiation by continuously tuning a first source of radiation through a selected range of frequencies;

determining the channel spectra of the material by directing a portion of the first beam of radiation through a known length of the material;

obtaining heterodyne marker beats by heterodyning a portion of the first beam of radiation with a second beam of radiation from a second source of radiation; and

determining the index of refraction by comparing the channel spectra to the heterodyne marker beats.

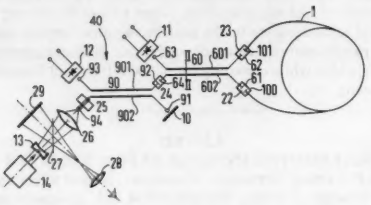
4,325,636
INTERFEROMETER WITH A SINGLE-MODE WAVEGUIDE COIL

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,537
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804119
Int. Cl.³ G01B *9/02;* G02B *5/14*
U.S. Cl. 356—350 **5 Claims**

1. In an interferometer having a light source and a single-mode optical waveguide wound into a coil, said coiled waveguide having a surface at each end for acceptance of light into the waveguide and for the displaying of light in the waveguide, the improvements comprising a first optical directional coupler and an additional optical directional coupler, each of said

optical directional couplers having four input/output ends with a pair of input/output ends at each end of the coupler, said first coupler having one input/output end of one pair of ends being axially coupled to one of said end surfaces of said coiled waveguide and a second input/output end of the one pair being coaxially coupled to the other of said end surfaces of said coiled waveguide, said first coupler having one end of the other pair of ends being coupled to a first light sensitive element and the other end of the other pair of ends being coupled to one end of a first pair of ends of the additional optical directional coupler, the other end of the first pair of ends of the



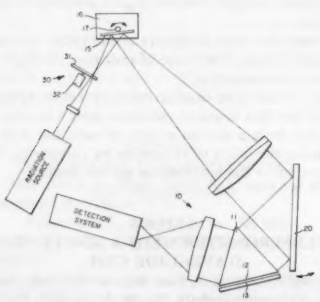
additional directional coupler being closed by a light absorber, said additional optical directional coupler having one end of a second pair of ends being coupled to a second light sensitive element; and means for coupling said light source to a second end of the second pair of ends of the additional optical directional coupler, said means for coupling including imaging means for forming a real image of the light source on said second end said imaging means including imaging optics, and said means for coupling including means for making a magnified observation of the input coupling of light into the second end of the additional coupler.

4,325,637

PHASE MODULATION OF GRAZING INCIDENCE INTERFEROMETER

Robert C. Moore, Rochester, N.Y., assignor to Tropel, Inc., Fairport, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,203
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—359 **8 Claims**



1. A method of modulating phase in a grazing incidence interferometer having a light beam generating means, a reference surface, and a test surface, said method comprising:

a. modulating the angle of incidence of said light beam onto said reference surface; and

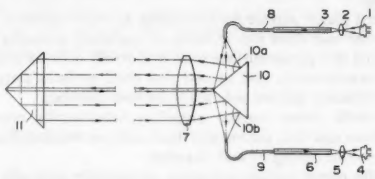
b. spacing said test surface far enough from said reference surface so that said modulation of said angle of incidence of said light beam onto said reference surface changes the phase relationship between the interferring beam reflected from said test surface and the reference beam reflected from said reference surface substantially more than it changes the sensitivity of said interferometer to surface variations between said reference and test surfaces.

4,325,638

ELECTRO-OPTICAL DISTANCE MEASURING APPARATUS

Harumi Takeda; Kiichi Furuya; Susumu Takahashi, and Hiroshi Tamaki, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,229
Claims priority, application Japan, Apr. 27, 1979, 54-52238
Int. Cl.³ G01B *11/14*; G02B *5/17*
U.S. Cl. 356—375 **3 Claims**



1. A distance measuring apparatus comprising objective lens means having a focal point and at least one photoelectric light-emitting element, optical fiber means between said objective lens means and said photoelectric element and comprising at least one first optical fiber having one end arranged to receive a light beam from said light-emitting element and at least one second optical fiber having one end which is an end abutting relationship with the other end of the first optical fiber so that light is transmitted between said first and second optical fibers, said first optical fiber being at said other end larger in area than said one end of the second optical fiber so that the light beam transmitted through the first optical fiber is partially prevented from entering the second optical fiber, the other end of said second optical fiber being at said focal point of the objective lens means so that the light beam which has passed through the second optical fiber and the objective lens means is emitted in the form of a parallel light beam, light receiving means arranged to receive the light beam which has been projected from the objective lens means and reflected by a reflector located at a measuring point.

4,325,639

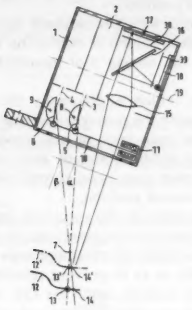
METHOD FOR MEASURING DISTANCES AND APPARATUS FOR PERFORMING THE METHOD

Hans Richter, Augsburg, Fed. Rep. of Germany, assignor to H. A. Schlatter AG, Schlieren, Switzerland

Filed Feb. 4, 1980, Ser. No. 117,994
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—376 **11 Claims**

1. A method for measuring distances and for determining the three-dimensional contour of a workpiece comprising directing two light beams of different wavelengths onto the workpiece, pivoting the beams in their common plane, pivoting the common plane around an axis which is common to said plane, measuring the angles of inclination of the lightpoints produced

by the beams on the workpiece surface in the different wavelengths, determining the position of the image of each light



point and calculating the distances and the contour using the angles of inclination and the positions of the images.

4,325,640

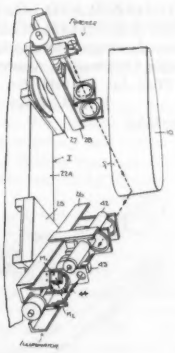
ELECTRO-OPTICAL TRIANGULATION RANGEFINDER FOR CONTOUR MEASUREMENT

Marc G. Dreyfus, 4 Arnold St., Old Greenwich, Conn. 06870, and Arnold Pellman, 30 Colony Ct., Stamford, Conn. 06905, assignors to Marc G. Dreyfus, Old Greenwich and Arnold Pellman, Stamford, both of, Conn.

Division of Ser. No. 14,855, Feb. 23, 1979, Pat. No. 4,226,536. This application Apr. 29, 1980, Ser. No. 144,873

Int. Cl.³ G01B *11/24;* **G01C** *3/10*

U.S. Cl. 356—376 **1 Claim**



1. In a system for measuring the surface contour of a shaped object, a triangulation range-finder assembly comprising:

A. a supporting beam at a position facing the surface to be measured:

B. a light-beam illuminator pivotally mounted on said beam; said light beam being generated by a laser beam source; and a beam expander including an anamorphic lens to spread out said laser beam to create a luminous spot on said surface having a fine line formation which is parallel to the longitudinal axis of said object;

C. an automatic tracker pivotally mounted on said beam at a point thereon spaced from the illuminator pivot point to exactly define a triangulation baseline having a known value extending between the pivot points; and said tracker having a two state readout whose output is the algebraic sum of a course angle and a fine angle tracker measurement;

D. means to cause said illuminator to swing through a sector wherein said light beam impinges on a said surface to produce a luminous spot thereon that scans in a path extending from one edge of said object to the other and to cause said tracker in response to light reflected from said surface to follow said scanning spot, said illuminator and said tracker having counterbalanced structures to maintain fixed centroids on said beam, said system further including means operatively associated with said illuminator and said tracker to determine the changing angular values assumed thereby in the course of a tracked scan; and a computer having said baseline value stored therein and responsive to said changing angular values to compute by triangulation the changing location of said spot in the course of said tracked scan and to thereby provide a reading of the contour of said object in the path of the scan.

4,325,641

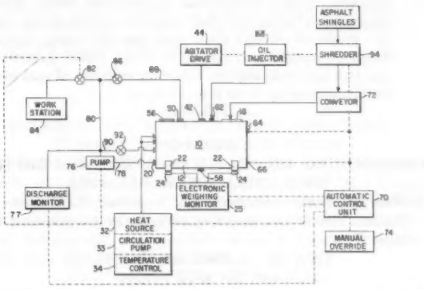
CONVERSION TANK FOR RECYCLING ASPHALTIC SHINGLE TABS

Stephen R. Babus, Cliffwood Rd., Chester, N.J. 07930, and George T. Tucker, 25 Robinhood La., Chatham, N.J. 07928, assignors to Stephen R. Babus, Chester and George T. Tucker, Chatham, both of, N.J.

Filed Nov. 8, 1979, Ser. No. 92,346

Int. Cl.³ B28C *7/04;* **B01F** *15/02, 15/04, 15/06*

U.S. Cl. 366—18 **23 Claims**



1. An apparatus for recycling asphaltic waste material comprising:

a. a tank having an inlet and an outlet, said inlet allowing for passage into said tank of the asphaltic waste material;

b. means for initially injecting a predetermined amount of weight of an asphaltic oil into said tank, said asphaltic oil having a grade of penetration greater than the asphaltic content of the waste material when in a substantially liquified form;

c. means for monitoring the weight of the contents of said tank such that a predetermined ratio of the amount by weight of asphaltic waste material to that of asphaltic oil is achieved upon selective admission of the amount of asphaltic waste material into said tank;

d. means for heating said asphaltic oil and the asphaltic waste material within said tank to form a slurry, the asphaltic waste material being dissociated into substantially liquified asphaltic waste material and substantially solid asphaltic waste material;

e. means for agitating said slurry within said tank so as to intermix said asphaltic oil and substantially liquified and solid asphaltic waste material; and

f. means for discharging said slurry from said tank through said outlet.

4,325,642
STORAGE AND HOMOGENIZING TANK FOR KAOLIN SUSPENSIONS

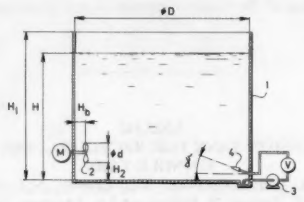
Jiri Kratky; Ivan Fort, both of Prague; Petr Havel, Pilsen; Vaclav Machacek, Pilsen; Bohuslav Masek, Pilsen, and Konstantin Hruban, Slapanice u Brna, all of Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Filed Sep. 4, 1980, Ser. No. 184,025

Claims priority, application Czechoslovakia, Sep. 11, 1979, 6155-79

Int. Cl.³ B01F *15/02, 5/04*

U.S. Cl. 366—137 **6 Claims**



1. An arrangement for homogenizing and storing a kaolin-suspension, comprising in combination;

a storage tank having a horizontal bottom and vertical side walls;

at least one agitating device mounted on said side walls, said agitating device comprising a rotatable shaft, driving means for rotating said shaft, and an impeller blade coaxially mounted on said shaft, said impeller blade having a diameter equalling 1/5 to 1/30 of the inside diameter of said storage tank; and the blade tip velocity of said impeller blade ranging from 6 to 12 m/s.

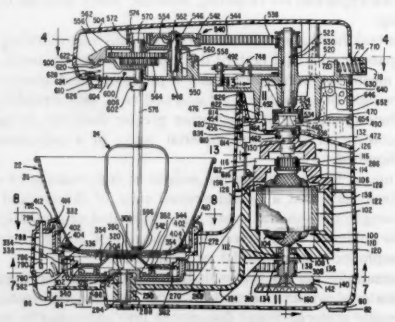
4,325,643
FOOD-MIXING APPARATUS COMPRISING A DRIVING UNIT AND A SEPARABLE ARM

William H. Scott, Lombard, and Mohamed K. Wagdy, Des Plaines, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1980, Ser. No. 167,503

Int. Cl.³ A47J *43/044*

U.S. Cl. 366—200 **16 Claims**



1. In a food-mixing apparatus comprising

(a) a console, which has a transverse portion and an upright portion,

(b) a mixing bowl, which is supported on the transverse portion,

(c) a motor, which is mounted in the console,

(d) an arm, which is mounted pivotally to the upright portion, for pivotal movement through positions including a lowered position, wherein the arm extends transversely over the mixing bowl supported on the transverse portion, and a raised position,

(e) a mixing tool, which is mounted operatively to the arm,

(f) a power train, which is carried by the arm so as to be coupled to the mixing tool mounted operatively to the arm, and

(g) a coupler, which is driven by the motor, and which cooperates with the power train so as to couple the motor to the power train upon pivotal movement of the arm to the lowered position, and so as to uncouple the motor from the power train upon pivotal movement of the arm from the lowered position,

an improvement wherein the apparatus comprises

(h) a latching and pivoting mechanism, which connects the arm to the console, which comprises a first means latching automatically so as to prevent relative movement of the arm and the console, until the first means is unlatched, upon pivotal movement of the arm either to the lowered position or to the raised position, and so as to prevent relative movement of the arm and the console except for pivotal movement of the arm, until the first means is unlatched, upon pivotal movement of the arm to a pivotal position between the lowered position and the raised position, and which comprises a second means being arranged to be actuated manually and unlatching the first means when actuated manually so as to permit pivotal movement of the arm from any pivotal position, and so as to permit the arm to be removed from the console upon further movement of the arm from the raised position, in a sense opposite to pivotal movement of the arm from the raised position toward the lowered position.

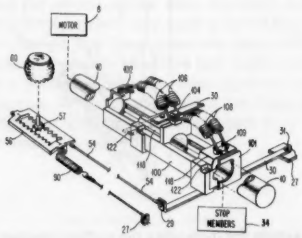
4,325,644
WORK EQUALIZER AND LOADING FOR A SINGLE ELEMENT PRINTER SELECTION SYSTEM

Steven A. Curry, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,589

Int. Cl.³ B41J *1/60*

U.S. Cl. 400—161.4 **4 Claims**



1. A selection system for a single print element printer comprising a frame, a print element, rack and pinion means for rotating said print element, linkage means for moving said rack with respect to said pinion, a movement multiplier arm having two ends, and connected to said linkage means at one end thereof, said multiplier arm having at the opposite end thereof a grounded pivot and connected at a point intermediate said ends to a controlled displaceable member, powered means for effecting reciprocal movement of said controlled displaceable member, at least a stop member, first spring bias means urging said controlled displaceable member into engagement with said stop member, the improvement comprising:

a second bias means urgingly engaged with said rack in the same direction of movement as said displaceable member is spring biased by said first spring bias means, whereby

said second bias means increases the engagement force between said controlled displaceable member and said stop member through said multiplier arm without increasing required power of said powered means during any portion of the cycle, above the highest level of power provided to said powered means, without said improvement.

4,325,645

INKED RIBBON CARTRIDGE HAVING A GUIDE PLATE

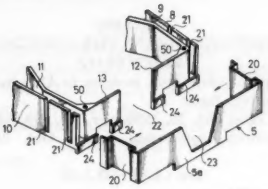
Mikio Miyajima, Nishine; Kohsaki Yanata, Morioka; Fujio Sasaki; Fumihisa Hori, both of Tamajama, and Hideki Fujimoto, Tokyo, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,511

Claims priority, application Japan, Jan. 24, 1979, 54/7571

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **8 Claims**



1. An inked ribbon cartridge comprising:

a chamber containing an inked ribbon therein;

a first guide arm extending outwardly from said chamber and including an inner and outer side wall spaced from one another to define a passageway receiving ribbon leaving said chamber;

a second guide arm extending outwardly from said chamber at a location spaced from said first guide arm and including an inner and outer side wall spaced from one another to define a passageway receiving ribbon returning to said chamber; and

means extending between the outer end portions of said first and second guide arms for guiding said ribbon past a printing position while exposing said ribbon at said printing position only, said guiding means including first and second rear guide plates extending towards one another from the end portion of the respective inner side wall of said first and second guide arms and having a space therebetween defining said printing position, a front guide plate lying along said first and second rear guide plates and having an opening at said printing position, said front guide plate being formed of a resilient metallic material and having angled end portions having fastening portions thereon, and engaging means formed on the outer side wall of said first and second guide arms for receiving said fastening portions as said angled end portions are flexed towards one another and holding said angled end portions against their outward resilience whereby said ribbon may be positioned in said printing position and thereafter said front guide plate may be assembled to said first and second guide arms to simplify assembly.

4,325,646

INKRIBBON CARTRIDGE

Masao Sasaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

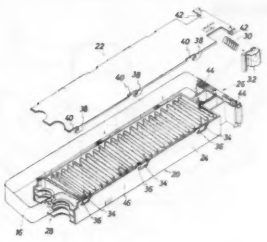
Filed Feb. 8, 1980, Ser. No. 119,831

Claims priority, application Japan, Feb. 16, 1979, 54-017731[U]

Int. Cl.³ B41J *32/02*

U.S. Cl. 400—196.1 **3 Claims**

1. In an inkribbon feed mechanism of a printer for successively feeding an inkribbon by a feeding mechanism, comprising a box member having opposite sidewalls and comprising a storing portion whose depth is substantially equal to the width of said inkribbon and has exit and inlet means for said inkribbon and a planar lid member which engages with said box member to complete the inkribbon cartridge, wherein the improvement comprises a plurality of spaced apart recesses formed in the outside of said sidewalls and extending from the top of said sidewalls downwardly and forwardly, a plurality of spaced apart projections formed between the forward portions of each



of said recesses and the top of said sidewalls and projecting above the top of said sidewalls, said planar lid member comprising a plurality of hooks extending from said lid member which are inserted into said recesses bearing against the recessed portions of said sidewalls to prevent outward deformation of said sidewall, said planar lid member further comprising a plurality of cutouts which engage with said projections to prevent inward deformation of said wall, said inkribbon cartridge maintaining its form when said box member and lid member are engaged together.

4,325,647

ELEMENT AND METHOD FOR CONNECTING CERAMIC AND METALLIC PARTS

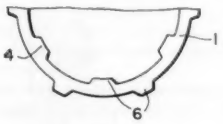
Horst R. Maier; Axel Krauth; Hans-Juergen Pohlmann; Horst Nink, all of Selb; Helmut Brobeck, Hessheim; Ingo Cropp, Frankenthal, and Dieter Bergmeier, Heidelberg, all of Fed. Rep. of Germany, assignors to Rosenthal Technik A.G., Selb and Aktiengesellschaft Kuehnle, Kopp & Kausch, Frankenthal, both of, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,615

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851507

Int. Cl.³ F16C *9/00;* **F16D** *1/00;* **F16G** *11/00*

U.S. Cl. 403—29 **13 Claims**



1. An elastic connection between ceramic and metallic structural elements, comprising

a ceramic structural element;

a metallic structural element having thermal and elastic properties different from those of said ceramic structural element; and

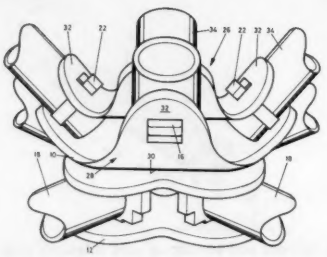
a connecting element connecting said ceramic and metallic structural elements, said connecting element comprising an insulating resilient body of ceramic material having a thermal conductivity of between about 0.02 and 0.25 W/cmK at a temperature difference between said ceramic and metallic structural elements of from about 100 to 1500 Centigrade degrees, an elastic modulus of between about

5000 and 150,000 N/mm^2 and being substantially free of plastic deformation.

4,325,648
TUBE CLAMP

Michael C. De Bliquy, Orange Grove, and Branko Nikolic, Norwood, both of South Africa, assignors to Design Research Marketing (Proprietary) Limited, Johannesburg, South Africa

Filed Mar. 17, 1980, Ser. No. 131,243
Int. Cl.^{3} F16B *1/00*
U.S. Cl. 403—218 **5 Claims**

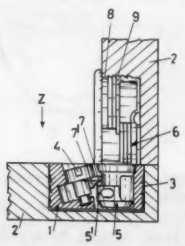


1. In a space frame, the combination of:
a node consisting of two juxtaposed clamping plates, with the ends of said frame members sandwiched between them, each said frame member terminating in a formation providing two diametrically opposed nibs projecting normally to the axis of the member, the plates including apertures for the nibs;
the end of each said frame member terminating in a collar having opposed nibs which pass through opposed apertures in the plates, and shoulders against which the plates bear; and
means to clamp the plates together.

4,325,649
JOINING DEVICE FOR CONNECTING TWO FURNITURE PARTS

Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Mar. 10, 1980, Ser. No. 128,922
Claims priority, application Austria, Mar. 12, 1979, 1811/79
Int. Cl.^{3} B25G *3/00*
U.S. Cl. 403—231 **1 Claim**

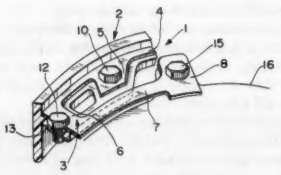


1. A joining device for connecting two flat furniture parts, said joining device comprising:
a dowel-shaped first housing adapted to be rigidly fixed within a hole in a side wall of a first flat furniture part, said first housing having therein an outwardly facing opening;
a dowel-shaped second housing adapted to be rigidly fixed within a hole in a side wall of a second flat furniture part, said second housing having a planar edge surface adapted to be in coplanar alignment with the plane of an end surface of the second flat furniture part when said second housing is fixed within the hole in the side wall of the second flat furniture part, the diameter of said first housing being equal to the diameter of the said second housing and said second housing having a stop flange at one end thereof;
a connecting pin integral with and extending outwardly from said planar edge surface of said second housing, said connecting pin extending into said opening in said first housing, said connecting pin including a projection; and
locking means rotatably mounted in said first housing for, upon rotation thereof, acting upon said projection and moving said connecting pin axially inwardly of said opening and for thereby moving the end surface of the second flat furniture part into abutment with the side wall of the first flat furniture part.

4,325,650
CONNECTION MEANS FOR COOLING FAN ASSEMBLIES

Hiroto Masai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 20, 1980, Ser. No. 199,008
Claims priority, application Japan, Oct. 26, 1979, 54-149214[U]
Int. Cl.^{3} F16D *3/66*
U.S. Cl. 403—372 **3 Claims**

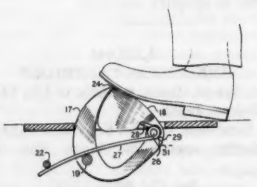


1. A connection means for a cooling fan assembly including a plate spring made of a single metal plate, said plate spring comprising an annular base, a plurality of projections extending radially inward of said base, said projections being distributed around said base, a plurality of tongues projecting radially inwardly from said base, and circumferential extensions axially resiliently deformable and each projecting from an individual one of said tongues and having an enlarged tip portion, said projections, said tongues and said tip portions being provided with holes through which bolts pass, respectively.

4,325,651
PROTECTED TRAFFIC CONTROLLER SPIKES

Alexander Szegi, 3915 Calle Cita, Santa Barbara, Calif. 93110

Filed Oct. 14, 1980, Ser. No. 196,214
Int. Cl.^{3} E01F *13/00*
U.S. Cl. 404—6 **8 Claims**



4. An assembly of a pivoted traffic control spike in an automobile roadway and a guard for the spike, comprising:

(a) a spike normally projecting above the roadway and having an upper tip;
(b) pivot means for the spike allowing rotation in one direction from a projecting position to a flattened position;
(c) means limiting rotation of the spike in the other direction;
(d) an upwardly inclined guard having an upper end disposed adjacent to the spike's upper tip;
(e) means mounting the guard on the spike for rotation relative to the spike;
(f) means for limiting the upward rotation of the guard;
(g) and spring means urging the guard to a projecting position and having a strength to support a pedestrian on the guard, but deflecting under the weight of an automobile wheel,

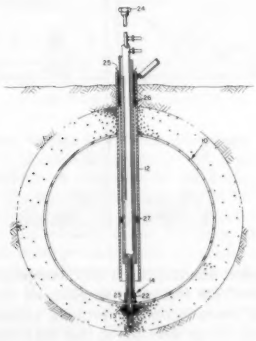
whereby the spike rotates in said one direction when struck by an exiting vehicle and the guard rotates toward a horizontal position when an automobile enters the other direction, to expose the spike's upper tip.

4,325,652

APPARATUS AND PROCESS FOR REPAIRING UNDERGROUND GASOLINE TANKS

John A. Kirschke, P.O. Box 125, Boerne, Tex. 78006

Division of Ser. No. 917,729, Jun. 21, 1978, Pat. No. 4,222,975. This application Apr. 7, 1980, Ser. No. 137,579
Int. Cl.³ B65G *5/00*
U.S. Cl. 405—57 **3 Claims**



1. In an apparatus for sealing and repairing underground gasoline storage tanks the subcombination of a drilling and injecting tool comprises:
a. a drill bit secured to,
b. a collar having a multiplicity of injection holes,
c. an elongated, outer pipe secured to said collar, said elongated outer pipe adapted to rotate said bit, and
d. an elongated, inner pipe positioned interior of said outer pipe,
e. at least one of the said injector holes communicating with the said outer pipe and at least one of the said injector holes communicating with the said inner pipe,
f. a first tank connected to the said outer pipe, and
g. a second tank connected to the said inner pipe.

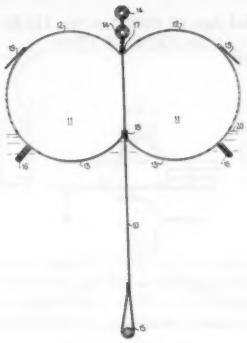
4,325,653

OIL CONTAINMENT BOOMS

Raymond G. Teasdale, Bath, England, assignor to National Research Development Corporation, London, England

Filed Jan. 10, 1979, Ser. No. 2,304
Claims priority, application United Kingdom, Jan. 12, 1978, 1318/78
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—68 **21 Claims**

1. An oil containment boom comprising double side by side buoyancy chambers, a central skirt member depending upwardly and downwardly from the buoyancy chambers, and having longitudinally extending upper and lower pockets accommodating respectively and air pressurising hose member



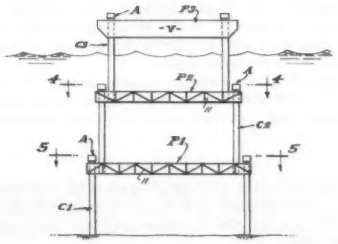
communicating internally with the interior of said side by side buoyancy chambers and a wire member extending longitudinally of the boom.

4,325,654

COLUMN SUPPORTED PLATFORM AND LIFT WITH PRESTRESSED DAMPING SYSTEM

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91348

Filed Nov. 7, 1979, Ser. No. 92,174
Int. Cl.³ E02B *17/04*
U.S. Cl. 405—196 **31 Claims**

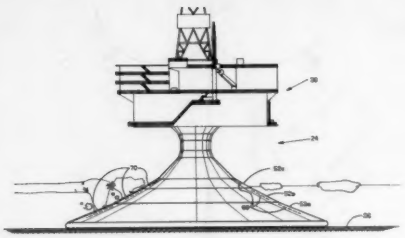


1. A self erecting column supported platform and load compensating system therefor, and including;
a vertically disposed primary structural column means adapted to be strengthened with the application of internal fluid pressure thereto,
a secondary structural member depending parallel to the primary structural column means from a load bearing header,
a platform of substantial weight to be elevated along said column,
an elevating means supporting the platform and to transport and thereby elevate the platform relative to said column means by supporting the same along said secondary structural member,
and a translator means to convert the weight force of the platform into fluid pressure applied internally of said column means to tension and thereby strengthen the same, and comprising means carrying the weight of the platform through the load bearing header of the elevating means support with the secondary structural member suspended therebetween and transfering fluid at commensurate pressure into said primary structural column means.

4,325,655
MULTIPLE SLOPE STRUCTURE

Hans O. Jahns, and Richard T. Weiss, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 16, 1980, Ser. No. 112,501
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—217 **9 Claims**

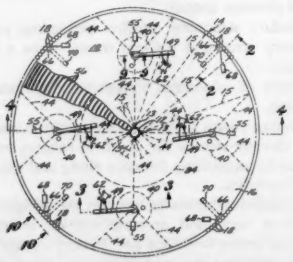


1. An offshore structure suitable for placement on the sea floor in a body of water having moving ice masses of various thicknesses, said structure comprising:
a superstructure located above the waterline for conducting working operations; and
a transportable substructure supporting said superstructure, said substructure including a foundational base, an internal frame assembly, and an inwardly and upwardly sloping outer wall to engage the ice masses, said wall having three ice-engaging wall sections with slopes arranged so that the slopes of said wall sections become progressively steeper towards the upper end of said substructure, the uppermost ice-engaging wall section having a slope not exceeding 70° to the horizontal, the middle ice-engaging wall section, adapted to lie completely below the waterline, having a slope of about 30° to the horizontal and the lowermost ice-engaging wall section having a slope of between 10° and 30° to the horizontal,
whereby thicker ice masses initially contact the middle and lowermost wall sections and thinner ice masses initially contact the uppermost and middle wall sections.

4,325,656
APPARATUS AND METHOD FOR FORMING OFF-SHORE ICE ISLAND STRUCTURE

Gilbert H. Bishop, 800 E. Ocean Blvd. Ste. 801, Long Beach, Calif. 90802

Continuation-in-part of Ser. No. 85,001, Oct. 15, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,931
Int. Cl.³ E02D *19/04;* E02B *3/00*
U.S. Cl. 405—217 **23 Claims**

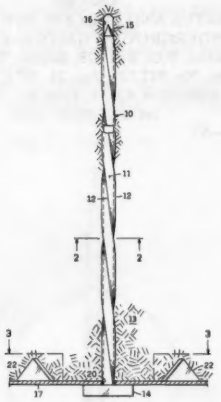


1. Apparatus for forming an ice island structure comprising:
a peripherally continuous, vertically oriented outer wall means defining a bounded space, at least the lowermost tier of said outer wall means including a plurality of separate, elongated buoyant elements, each having a hollow lower portion and air vent and blow means openings into said lower portion for allowing sea water to flood said lower portion to aid in vertically orienting each said element in the water, and for pressurizing said lower portion to blow said lower portion; and
means for introducing water into said bounded space for freezing by the elements whereby the mass of frozen water accumulates to form an ice island adapted to descend of its weight toward the substrate surface.

4,325,657
ROOF SUPPORT PIN

Gerald W. Elders, 38 Yakashba Estates, Prescott, Ariz. 86301

Filed Dec. 5, 1979, Ser. No. 100,449
Int. Cl.³ E21D *21/00, 20/00*
U.S. Cl. 405—259 **10 Claims**



1. A roof support assembly for a roof, comprising:
(a) roof support pin including an elongate rod having a non-circular cross-section to provide corners, the rod being twisted in one direction so that the corners provide longitudinal substantially helical fins, and
(b) a roof support plate held stationary relative to the roof and provided with an aperture in which the rod is received, the aperture having a cross-section with corners that engage corners of the rod cross-section for postitively turning the rod and rod corners into the roof strata as the rod is moved relatively longitudinally through the aperture.

4,325,658
SILICATE COMPOSITIONS AND USE THEREOF

Brian Baker, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 21, 1979, Ser. No. 96,301
Claims priority, application United Kingdom, Nov. 30, 1978, 46639/78
Int. Cl.³ C09K *17/00;* E02D *3/12;* B28B *7/34;* C08J *3/02*
U.S. Cl. 405—264 **9 Claims**

1. A gelling composition which comprises:
(a) 10 to 50 wt% alkali metal silicate (as solid),
(b) 1 to 15 wt% of an ester of C_1 to C_6 monobasic alkanoic acid with C_1 to C_5 alkanol or a diester of a C_2 to C_{10} dibasic alkanoic acid with a C_1 to C_5 alkanol,
(c) 0.01 to 10 wt% of rosin, a rosin ester or salt, or a rosin acid or a rosin acid ester or salt,
(d) the balance of the composition being water.

7. A gelling composition according to claim 1 which comprises:

(a) 10 to 50 wt % sodium silicate (as solid) with a molar ratio SiO_2:Na_2O in the range 2.0 to 5.0;

(b) 1 to 15 wt % of ethyl acetate, isopropyl acetate or a mixture of the methyl and/or ethyl diesters of two or three acids selected from the group consisting of adipic, succinic and glutaric acids;

(c) 0.01 to 10 wt % rosin or an ester of rosin with a C_1 to C_5 alkanol;

(d) the balance of the composition being water.

8. A method of stabilising the ground or of sealing a surface or of forming a foundry sand mould by contacting the ground, surface or sand with a composition according to claim 7.

4,325,659

MINERAL MINING INSTALLATION

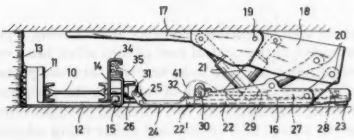
Lubomir Plevak, Lunen-Horstmar, and Walter Weirich, Dortmund, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,768

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909165

Int. Cl.³ E21D *23/16*

U.S. Cl. 405—299 **13 Claims**



1. A mineral mining installation comprising a conveyor, a plurality of hydraulically-operated roof support units positioned side-by-side at one side of the conveyor, hydraulic supply lines running along said one side of the conveyor, and a plurality of elongate, flat, plate-like intermediate members positioned at said one side of the conveyor, the intermediate members each being provided with a plurality of longitudinally-extending internal bores for feeding hydraulic fluid from the supply lines to the roof support units, wherein each internal bore is provided with a port at each end thereof, one of said ports being hydraulically connected to one of said hydraulic lines by a flexible hose, the other of said ports being hydraulically connected to one of said roof support units by another flexible hydraulic hose, and wherein the ports are sockets projecting from the upper surfaces of the intermediate members.

4,325,660

SINGLE LINE PRESSURE-PRESSURE PNEUMATIC TUBE SYSTEM

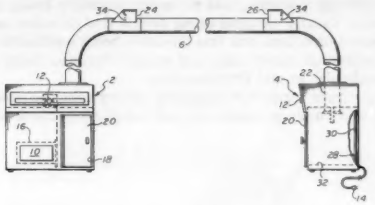
William W. Jones, Houston, Tex., assignor to C. K. Kelley and Sons, Inc., Houston, Tex.

Filed Feb. 26, 1980, Ser. No. 124,897

Int. Cl.³ B65G *51/08*

U.S. Cl. 406—84 **4 Claims**

1. A single line pneumatic tube system comprising; a first end terminal having a power unit therein; a second end terminal having a power unit therein; a single line of tubing connecting the first terminal to the second terminal; two inline valves in the tubing line, one adjacent each terminal; a carrier for travel in the tubing from one terminal to the other terminal upon pressurization of a terminal; the valve adjacent the pressurized terminal closing after passage of the carrier, while the valve adjacent the other terminal opens after the passage of the carrier whereby the pressure propelling the carrier is reduced slowing the travel of the carrier to the other terminal, wherein each inline valve is comprised of a valve body formed of a length of tubing, a longitudinal opening in the tubing, a housing positioned over the opening, an exhaust port in the top of the housing, a pivot member in the housing, a valve member pivoted on the pivot member, a seal member of the valve



member, the valve member moving to an open position as air flows in one direction and to a closed position where the seal member is in engagement with the exhaust port with air flow in the opposite direction.

4,325,661

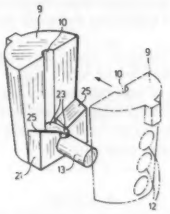
DRILL BIT END PROTECTORS

Jack J. Tickins, R.R. 3, Caledon East, Ontario, Canada

Filed Jun. 15, 1979, Ser. No. 48,705

Int. Cl.³ B23B *31/10, 39/00, 5/22*

U.S. Cl. 408—239 A **6 Claims**



1. A cutting end protector adapted to be clampingly engaged in a drill chuck for receiving a cutting end of a double ended flattened track bit in which the cutting end consists of a pair of cutting edges bordered by trailing surfaces and meeting at a cutting point, said cutting end protector comprising a thin, flat body portion which is apertured to receive a chuck pin for locating and restricting movement of the protector and which is provided with a cutting end receiving face having a central recess for receiving the cutting point of the cutting end and a pair of aligned chamfered face portions diverging outwardly and forwardly of the body portion, one on either side of the central recess, said chamfered face portions being slanted in opposing directions for fitting flushly with the cutting edge trailing surfaces.

4,325,662

TUBULAR KEY CUTTING MACHINE

Mark Evans, Shavertown, Pa., assignor to Henry Bartos, Dallas, Pa.

Filed Apr. 4, 1980, Ser. No. 137,517

Int. Cl.³ B23C *3/35*

U.S. Cl. 409—82 **7 Claims**

1. A tubular key cutting machine comprising:

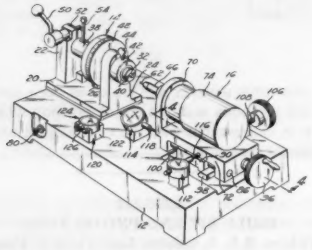
a base;

first means for retaining a tubular key blank to be cut, a shaft, said first means includes a chuck fixed to said shaft, said tubular key blank being fixedly held by said chuck establishing a longitudinal center axis for said tubular key blank, a stanchion assembly, said shaft being rotatably

mounted on said stanchion assembly, said stanchion assembly being fixedly mounted on said base;

a cutter for cutting a plurality of grooves within the exterior surface of the tubular key blank, said cutter being rotatably driven by a motor, said motor being mounted on a mounting assembly, said mounting assembly being separately lineally movable along both a first direction and a second direction, said first direction being parallel to said longitudinal center axis, said second direction being perpendicular to said first direction;

measurement means for accurately determining the position of said cutter in respect to said tubular key blank along



said first and second directions, said measurement means comprising a plurality of separate dial indicator devices, each said dial indicator device being mounted between said base and said mounting assembly to thereby sense the position of said mounting assembly in respect to said base; and

said first means being pivotally mounted on said base, said first means to be located into a single key cutting position during cutting of said tubular key blank, an alignment pin and opening located between said first means and said base which matingly cooperate when said first means is in said single key cutting position.

4,325,663

ARRANGEMENT FOR CLEANING CUTTING FLUID

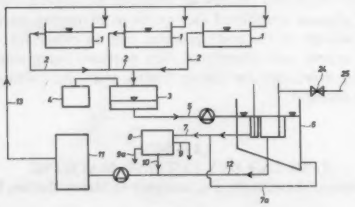
Hyosong M. Lee, Tumba, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

PCT No. PCT/SE78/00056, § 371 Date Jun. 11, 1979, § 102(e) Date Jun. 8, 1979, PCT Pub. No. WO79/00192, PCT Pub. Date Apr. 19, 1979

PCT Filed Oct. 9, 1978, Ser. No. 116,675

Int. Cl.³ B23Q *11/10*

U.S. Cl. 409—136 **7 Claims**



1. The combination of a series of collecting tanks for respective metal cutting machines, a cutting liquid in each said tank for use in metal machining, a first pipeline having inlet branches opening into said tanks in position to remove therefrom only an upper layer of cutting liquid, a container into which the outlet end of said pipeline leads, a vacuum pump connected to said container for creating a vacuum therein to draw cutting liquid from said tanks into said container, means connected to said container for receiving cutting liquid therefrom and cleaning said liquid, and a second pipeline for returning cutting liquid from said cleaning means to said collecting tanks.

4,325,664

CUTTING TOOL

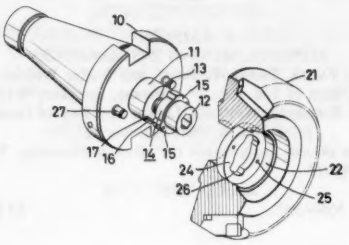
Yoshikatsu Mori, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 2, 1980, Ser. No. 155,090

Claims priority, application Japan, Jun. 30, 1979, 54-91684[U]

Int. Cl.³ B23B *31/44;* **B23C** *5/26*

U.S. Cl. 409—234 **3 Claims**



1. A cutting tool comprising an arbor head having a protuberance provided in the central part of said arbor head coaxially therewith, a bolt adapted to be screwed into said protuberance, a collar fitted on the shank of said bolt, the periphery of said collar being provided with two enlarged portions symmetrical about the axis of said collar, said collar being adapted to follow the axial movement of said bolt but not to rotate on its own axis, two guide pins, one end of each of said two guide pins being fixed to each of said two enlarged portions of said collar, the other end thereof being slidably inserted in each of two holes provided in said protuberance in parallel with the axis thereof, a cutter provided with a center hole having a shoulder midway of the depth thereof, and a ring fixed to said shoulder and provided with a hole having a shape similar to, but slightly larger than, the shape of said collar.

4,325,665

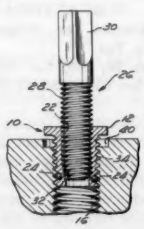
THREADED METAL INSERT

John A. Jukes, 680 Napa Court, Claremont, Calif. 91711, assignor to John A. Jukes, Claremont and George Mavriks, San Francisco, both of, Calif., a part interest

Continuation-in-part of Ser. No. 60,765, Jul. 26, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 130,621

Int. Cl.³ F16B *39/22, 13/06*

U.S. Cl. 411—176 **25 Claims**



1. A self-locking threaded insert having a tubular body which is threaded into a tapped hole in a base member comprising:

an exterior of said body having threads that mate with threads of said tapped hole;

an interior of said body having a portion which is threaded and a portion which is incompletely threaded; and

means for locking said insert to the walls of said hole, said locking means being discrete from said insert and positioned in the exterior of said insert outwardly from the incompletely threaded interior portion, so that said locking means will be forced outwardly to engage the wall of said hole when said incompletely threaded interior portion is threaded while in said hole.

4,325,666

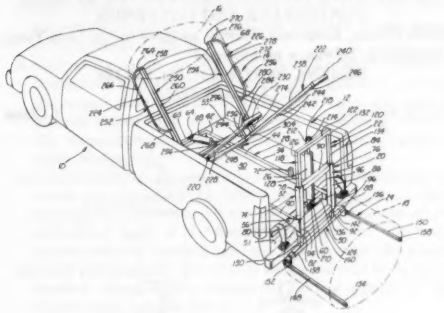
MATERIALS HANDLING DEVICE

Franklin O. Chain, Rte. 1, Box 40, and John P. Myers, Box 193, both of Oakwood, Okla. 73568

Filed May 5, 1980, Ser. No. 146,451

Int. Cl.³ A01D *87/12*; B60P *1/34*

U.S. Cl. 414—24.5 **51 Claims**



1. A materials handling device for selectively loading and unloading material on a support structure, the materials handling device adapted for mounting on the support structure and comprising:

a housing assembly pivotally connected to the support structure and disposed substantially adjacent one edge portion of the support structure, the housing assembly movable between a first position wherein the housing assembly is substantially vertically disposed and a second position wherein the housing assembly is substantially horizontally disposed on the support structure;

a frame having a first end portion and a second end portion, the frame slidably positioned within the housing assembly and movable between a vertically lowered position and a vertically raised position;

material engaging means mounted on the first end portion of the frame for engaging and supporting the material as same is selectively loaded and unloaded from the support structure, the material engaging means mounted on the first end portion of the frame so as to extend in a direction away from the support structure; and

frame and housing actuator means for selectively moving the frame between the vertically lowered position and the vertically raised position and for selectively moving the housing assembly between the vertically disposed first position and the horizontally disposed second position, the actuator means disposed between and pivotally connected to the support structure and to the second end portion of the frame such that upon activation of the actuator means, when the frame is in the vertically lowered position and the housing assembly is in the first position the frame is movable between the vertically lowered position and the vertically raised position and continued activation of the actuator means selectively moves the housing assembly between the first position and the second position.

4,325,667

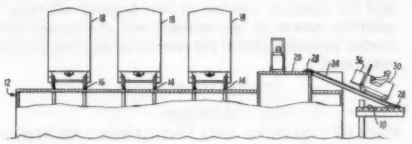
FREIGHT HANDLING MEANS

James W. Freeman, San Pablo, Calif., assignor to Naylor, Neal & Uilkema, San Francisco, Calif., a part interest

Division of Ser. No. 690,978, May 28, 1976, Pat. No. 4,055,265. This application Aug. 10, 1977, Ser. No. 823,276

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 **3 Claims**



1. A railroad car carrier vessel comprising a rail deck and a loading deck, said rail deck having rails to support at least one row of freight cars, said loading deck being disposed at substantially the level of the freight-supporting floors of said cars and extending for substantially the length of said rails, ramp means to connect said loading deck with a dock to enable freight carrier vehicles to move from said dock onto said deck, and runway means to connect said loading deck with said floors of said cars to enable said vehicles to move from said loading deck onto said floors.

4,325,668

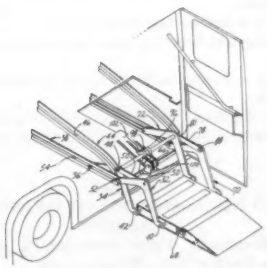
POWERED PLATFORM LIFT SYSTEM FOR PERSONS IN WHEELCHAIRS

Ernest L. Julian, Tustin, and Phyllis S. Gaylard, Huntington Beach, both of Calif., assignors to Pinetree Service Corporation, Westminister, Calif.

Filed Sep. 18, 1978, Ser. No. 943,477

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—546 **7 Claims**



1. A wheelchair lifting system comprising:

a housing including means for supporting wheelchairs therein;

guide means for the lifting system, said guide means including two pairs of tracks mounted in and secured to the housing, each pair of said tracks including a horizontal track and an arcuate track curving downwardly, each of said arcuate tracks being positioned above the horizontal track of its respective pair;

a support linkage for the lifting system mounted on the tracks of the guide means, the said linkage including two pairs of opposed, horizontally, spaced apart generally right-angle-shaped support arms and a linking bar disposed parallel to and extending between each pair of arms, said support arms defining upper and lower extremities and a knee at the location of the right angle;

a wheelchair platform mounted on and pivotally secured between the respective pairs of linking bars and support arms at the upper extremities thereof;

a roller attached to the exterior side of the knee and the lower extremities of each of the support arms, said rollers on said extremities being mounted on the horizontal tracks of the guide means and said rollers on said knees being mounted on the arcuate tracks of the guide means;

chocking means located on the wheelchair platform for bracing the wheels of a wheelchair placed on said platform; and

drive means for extending and retracting the support linkage and the platform relative to said housing whereby said platform moves in an outward and downward motion during extension and in the reverse of said motion during retraction.

4,325,669

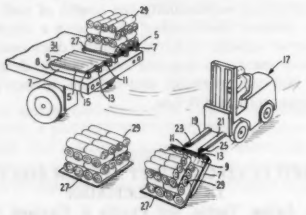
PALLET LOADING AND UNLOADING METHOD

George Schafer, 845 White Rd., Watsonville, Calif. 95076

Filed Aug. 4, 1980, Ser. No. 175,311

Int. Cl.³ B66F *9/00*

U.S. Cl. 414—786 **3 Claims**



1. The method of loading and unloading a pallet comprising:

a. providing a pallet having a low friction bearing surface,

b. said pallet having fastening means at one end thereof,

c. placing a thin tough plastic sheet on the bearing surface of said pallet,

d. placing a load on said plastic sheet,

e. engaging said fastening means and raising one end of said pallet,

f. moving said pallet in the direction of said fastening means whereby,

g. said load and said plastic sheet slide off said pallet, assisted by gravity allowing said pallet to be retrieved to reuse.

4,325,670

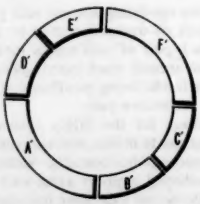
METHOD FOR ADMITTING STEAM INTO A STEAM TURBINE

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 27, 1980, Ser. No. 181,566

Int. Cl.³ F01D *17/18*

U.S. Cl. 415—1 **1 Claim**



1. A method for incrementally admitting steam into a steam turbine through at least first and second nozzle chambers wherein said second nozzle chamber is larger than the said first nozzle chamber, said method comprising:

increasingly activating the first nozzle chamber with increasing load on the turbine;

increasingly activating the second nozzle chamber with increasing load on the turbine after the first nozzle chamber has been completely activated;

increasingly deactivating the first nozzle chamber during increasing activation of the second nozzle chamber, the deactivation of said first nozzle chamber being initiated when the steam flow rate through the second nozzle chamber is less than the maximum steam flow rate therethrough at complete activation by a flow rate equal to the steam flow rate through the first nozzle chamber during complete activation thereof;

increasingly reactivating the first nozzle chamber after it has been completely deactivated and the second nozzle chamber has been completely activated.

4,325,671

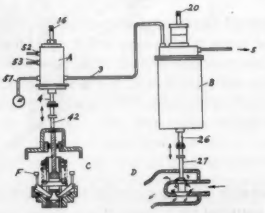
SIGNAL WAVE LOADED PRESSURE OIL REMOTE CONTROLLER AND GOVERNOR

Nei-Ho Chiang, Kaohsiung, Taiwan, assignor to Yin-Lung Yang, Kaohsiung, Taiwan, a part interest

Filed Oct. 30, 1978, Ser. No. 956,188

Int. Cl.³ B23B *39/16*

U.S. Cl. 415—43 **1 Claim**



1. An engine speed governor for use on a steam turbo-generator, comprising:

a steam turbo-generator engine crankshaft speed measuring device,

a transmitter for converting axial movement of the speed measuring device into a signal wave oil pressure and transmitting oil pressure from the steam turbo-generator engine lubricating system through a pressure reducing valve of any known type as a base pressure to combine with said signal wave oil pressure as a working pressure for the present invention, comprising:

a cylindrical body having four ports on the side wall of the cylindrical body, said ports are connected by means of tubings to an oil pressure indicator, a return to the said lubricating system, a pressure line from the said lubricating system through said pressure reducing valve which is in between the transmitter and the steam turbo-generator engine lubricating system, and a pressure line to a receiver respectively,

a control valve consisting of two pistons axially spaced apart and fixedly connected together by a short central rod, said piston one above the other are axially movable in the cylindrical body dividing the cylindrical body into three chambers, the upper, the middle and the lowest chambers, oil passages provided on the lower one of the said piston communicating the lowest chamber to the middle chamber of the cylindrical body,

a spring means acting on the bottom face of the lower piston, other end of the spring being seated on a stem wich is mechanically connected to the said steam turbo-generator engine crank shaft speed measuring device,

two concentrical springs means are provided thereon the top face of the upper piston, the inner one of the two springs being adjustable to vary the base pressure by an adjusting

screw which is protruded from the top center of the cylindrical body,

means for moving the piston of the control valve to a balanced position by said springs on the top face of the upper piston against the oil pressure in the lowest chamber of the cylindrical body plus the spring tension on the bottom face of the lower piston which is compressed by axially movement of the speed measuring device, at the moment of this balanced condition said port connecting to the return line and the other port connecting to the pressure line from the pressure reducing valve are both shut off by the pistons of the control valve simultaneously,

means for converting the axial movement of the speed measuring device into oil pressure by changing the balance force on the pistons of the control valve, the more compression of the spring on the bottom face of the lower piston by the axial movement of the speed measuring device, the less oil pressure in the lowest chamber of the cylindrical body of the transmitter will be transmitted to the receiver,

a steam turbo-generator engine main control valve for either increasing or decreasing of steam pressure to the steam turbo-generator engine,

a receiver for use to convert said working pressure from the transmitter into axially movement of a spindle to actuate the engine main control valve, the receiver is also used to provide a feed back motion to bring the control valve of the transmitter to its neutral balanced position hydraulically, comprising:

a cylindrical body having a top cover, two ports on the top cover are connected by means of tubings, one of them leading the oil pressure from the lowest chamber of the cylindrical body of the transmitter, the other one being connected to a return line to the said lubrication system,

a power piston axially movable in the cylindrical body of the receiver being fixedly connected with a spindle to the engine main control valve,

a pilot valve consisting of four pistons axially spaced apart being axially movable in the power piston,

oil passages drilled in the power piston and in the pilot valve for directing the oil pressure from the transmitter to the bottom end of the power piston as the pressure is increased from the lowest chamber of the transmitter which occurs when the speed of the steam turbo-generator engine drops, this movement results in the power piston moving up to open the engine main control valve and bringing back the engine speed, vice versa,

spring means provided between the piston and the pilot valve, and between the power piston and the top cover, a conical spring on the top of the pilot valve being adjustable by an adjusting pin which is protrude from the center of the top cover for speed drop adjustment,

means provide in the receiver to give a feed back action to the transmitter by the said springs and said oil passages hydraulically.

4,325,672
REGENERATIVE TURBO MACHINE

Herbert Sixsmith, Oxford, and Robert E. Poole, Wilby, England, assignors to The Utile Engineering Company Limited, Northamptonshire, England

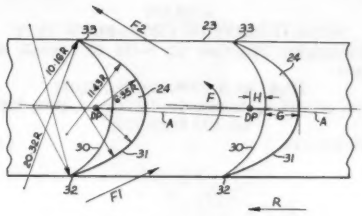
Filed Dec. 11, 1979, Ser. No. 102,578

Claims priority, application United Kingdom, Dec. 15, 1978, 48621/78

Int. Cl.³ F04D *5/00*

U.S. Cl. 415—53 T **18 Claims**

1. A fluid dynamic machine including a rotor, a peripheral part of which is provided with a set of blades, and a stator including structure defining an annular channel accommodating said peripheral part, the walls of said channel being spaced from the set of blades to form a continuous toroidal passage extending angularly around a major portion of said periphery between inlet and outlet ports of the stator and the remaining angular extent of said channel having minimum clearance about said blades, said blades having a concave face leading in the direction of operative rotation of the rotor and a convex trailing face of substantially greater overall curvature than that of said leading face to provide each blade with an aerofoil cross-section, the curvature of said faces causing fluid flow passing between the blades to be subjected to a change of direction through a turning angle of at least 100° measured from entry of said flow between entry tips of a pair of adjacent



blades at an angle mid-way between tangents to the curvature at said entry tips of the convex trailing face of the leading one of the pair and of the concave leading face of the trailing blade respectively to exit of said flow between exit tips of said pair at an angle mid-way between like tangents to the curvature of the respective blade faces at said exit tips, fluid transmitted through said toroidal passage co-acting with said blades to follow a substantially spiral path passage through the set of blades more than once as the rotor rotates in use.

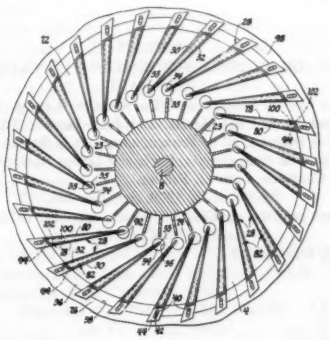
4,325,673
VARIABLE VANE SEAL

Beuford C. Hall, Jr., Clermont, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1980, Ser. No. 129,042

Int. Cl.³ F04D *29/08*

U.S. Cl. 415—113 **4 Claims**



1. In a variable configuration diffuser for a gas compressor having means for forming spaced diffuser walls defining a diffuser region having an entrance and an exit for diffusion of flow from a compressor rotor to an outlet and an annular cascade of variable vanes with each of the vanes extending between said walls and including a leading edge adjacent the entrance to the diffuser region and a trailing portion adjacent the exit therefrom and means for positioning each of said vanes in a variable relationship with respect to said diffuser region the improvement comprising: means forming a space in each of said vanes having side openings therefrom, an inflatable member located within said space, said inflatable member having spaced walls located in spaced relationship with respect to the

inner surface of the diffuser walls to reduce vane drag during adjustment of said vanes with respect to the diffuser region to control the ratio of flow area at the diffuser entrance to the flow area at the diffuser exit, and means for inflating said inflatable member to cause the spaced walls thereof to be biased into sealed engagement with the spaced diffuser walls within the diffuser region thereby to prevent leakage from the pressure-to-suction side of each of the vanes.

4,325,674

WIND TURBINE OF CROSS-FLOW TYPE

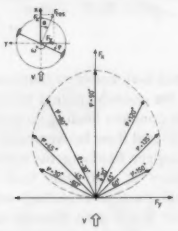
Olle Ljungström, Sälgstigen 12, S-181 62 Lidingö, Sverige, Sweden

Filed Oct. 5, 1979, Ser. No. 82,051

Claims priority, application Sweden, Oct. 6, 1978, 7810503

Int. Cl.³ F03D 3/06

U.S. Cl. 416—19 **4 Claims**



1. In a wind turbine of the cross flow type including a rotor shaft and vanes mounted to said rotor shaft,

the improvement comprising:

only two vanes being mounted to said rotor shaft,

each of said only two vanes being mounted to said rotor shaft so that each vane extends from said rotor shaft in a direction that is substantially perpendicular to the direction from which the other vane extends from said rotor shaft.

4,325,675

BLADE PROFILE FOR ROTARY WING OF AN AIRCRAFT

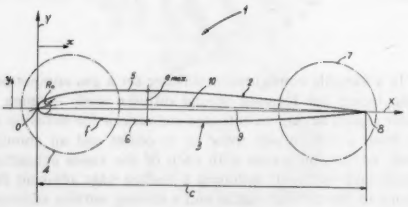
Jacques Gallot, Sausset les Pins; Georges Vingut, Marseilles; Michel V. de Paul, Senlis, and Jean-Jacques Thibert, Verriere-le Buisson, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris and Office National d'Etudes etc., Chatillon, both of, France

Filed Dec. 5, 1979, Ser. No. 100,350

Claims priority, application France, Aug. 10, 1979, 7920454

Int. Cl.³ B64C 27/46, 3/14

U.S. Cl. 416—223 R **9 Claims**



1. A blade profile for rotary wing of an aircraft, comprising between the leading edge and the trailing edge, a convex upper surface and a non-concave lower surface, wherein at the point of maximum curvature of the leading edge, the radius of curvature Ro is approximately defined by the expression $Ro = 1.7\ C.\ e_{max}^2$, in which C represents the chord and e_{max} the maximum relative thickness of said profile, and the portion of lower surface adjacent said leading edge comprises a first lower surface zone immediately adjacent the leading edge and extending to a few percent of the chord C, in which the curvature decreases rapidly in the direction of the trailing edge and a second lower surface zone prolonging the first and extending up to about 20% of the chord from said leading edge, this second lower surface zone having a very small general curvature decreasing continuously in the direction of the trailing edge up to the point of minimum curvature of the lower surface which is located at the end of said second zone.

4,325,676

LIQUID FUEL PUMPING APPARATUS

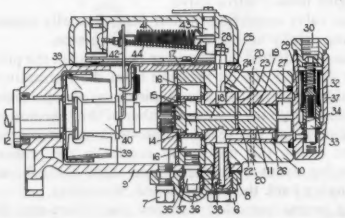
Ivor Fenne, Greenford, and Richard J. Andrews, Guildford, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 28, 1979, Ser. No. 98,043

Claims priority, application United Kingdom, Jan. 16, 1979, 01595/79

Int. Cl.³ F04B 23/10, 23/12

U.S. Cl. 417—206 **6 Claims**



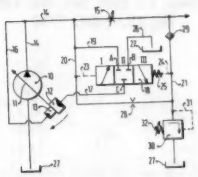
1. A fuel pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a housing, a distributor member rotatable within the housing, an injection pump including a rotary part rotatable with the distributor member, a bore formed in said rotary part, a pumping plunger located in said bore, a cam ring located in the housing, said cam ring having spaced cam lobes which can impart inward movement to the plunger as the rotary part and distributor member rotate, a plurality of outlet ports formed in the housing and which in use, are connected to fuel injection nozzles respectively of an associated engine, a delivery passage in the distributor member, said delivery passage communicating with said bore and being positioned to register with the outlet ports in turn during successive periods of inward movement of the plunger, fuel supply means in the housing and distributor member through which fuel can flow to said bore at least during part of the time the delivery passage is out of register with an outlet port, said fuel supply means including a supply passage in the housing, a source of fuel under pressure for supplying fuel to said supply passage, throttle means for controlling the flow of fuel through said supply passage and means operable in association with said throttle means for allowing the bore to be vented to a low pressure when the throttle means is set to prevent fuel flow from said source to the bore.

4,325,677

ARRANGEMENT FOR THE REGULATION OF THE OUTPUT AND FOR LIMITING THE OUTPUT FLUID PRESSURE OF AN ADJUSTABLE PUMP

Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,884
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840687
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—218 5 Claims



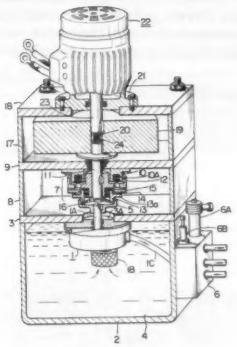
1. A control arrangement for regulation of the output flow and output pressure of a working fluid delivered by an adjustable pump having an outlet end and an adjusting member, comprising actuating means coupled to said adjusting member for adjusting the delivery of the pump; an outlet conduit connected to said outlet end; a first throttle in said outlet conduit; a branch conduit connected to said outlet conduit upstream of said first throttle; a second throttle in said branch conduit; a one-way valve connecting said branch conduit downstream of said second throttle to said outlet conduit downstream of said first throttle; a fluid flow regulating valve having ports connected for controlling said actuating means by working fluid upstream of said first throttle, said regulating valve being biased at one end thereof by a biasing spring and attacked at the other end thereof by a differential pressure resulting in said branch conduit upstream of said first and second throttles; a normally closed overpressure control valve connected between said branch conduit downstream of said second throttle and a tank, said overpressure control valve cooperating with said one-way valve to open the same in response to a pressure increase downstream of said second throttle; said regulating valve being a three port-three position valve movable in response to said differential pressure from a neutral position to two working positions located to opposite sides of said neutral position; said actuating means including at least one piston-and-cylinder means operatively connected to said adjusting member of said pump tending to move it in one direction for changing the output of the pump, and means counteracting said one cylinder-and-piston means, said regulating valve in said neutral position preventing flow of fluid into and out from said one cylinder-and-piston means, and connecting in one of said working positions said one cylinder-and-piston means to a tank so that said counteracting means moves said adjusting member in unloading direction, and connecting in the other working position said cylinder-and-piston means to said outlet conduit upstream of said first throttle so as to move said adjusting member against said counteracting means in a loading direction; and wherein one control conduit connects said branch conduit upstream of said second throttle to said other end of said regulating valve, and another control conduit connects said branch conduit downstream of said second throttle to said spring-biased one end of said regulating valve.

4,325,678

HYDRAULIC PRESSURE PRODUCING SYSTEM FOR A HYDRAULIC PRESS

Hisanobu Kanamaru, Katsuta; Moisei Okabe, Tokyo; Akira Tohkairin, Katsuta; Hideo Tatsumi, Mito, and Takuzo Kurosawa, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Kawamura Co., Ltd., both of Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,844
Int. Cl.[3] F04B *21/00*
U.S. Cl. 417—313 4 Claims



1. A hydraulic pressure producing system for a hydraulic press comprising:

a rotary pump for producing hydraulic pressure having a suction port opening in a liquid within a liquid tank, and a rotary shaft arranged to rotate about an axis perpendicular to the liquid level in the liquid tank;

first support means having said rotary pump secured thereto in a manner to allow said rotary shaft to extend upwardly therethrough;

a clutch rotary shaft journaled for rotation about the same axis as the pump rotary shaft by second support means secured in place in spaced-apart relation to said first support means;

clutch means interposed between said clutch rotary shaft and said rotary shaft of said rotary pump and operative to be engaged and disengaged electromagnetically;

a motor secured in upright position to upper support means located in spaced-apart relation to said second support means, said motor having an output shaft that is rotatable about said axis; and

a flywheel mounted between said output shaft of said motor and said clutch rotary shaft.

4,325,679

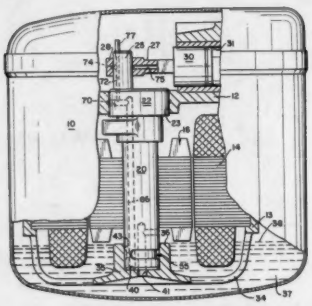
OIL PUMP FOR HERMETIC COMPRESSOR

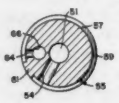
Roger W. Smith, Grove City, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 22, 1980, Ser. No. 171,195
Int. Cl.[3] F04B *39/02*
U.S. Cl. 417—372 6 Claims

1. A hermetic refrigeration compressor comprising a case, a motor compressor unit inside said case and a body of lubricating oil in the bottom of said case defining an upper surface, said unit including a motor having a crankshaft rotatable about a vertical axis, said unit including a bearing member at the lower end of said crankshaft below said oil upper surface, said bearing member including a thrust surface normal to said axis, said crankshaft having an end surface engaging said thrust surface, said bearing member having a cylindrical surface extending upward from said thrust surface coaxially with said vertical axis, said crankshaft having a cylindrical journal surface in close bearing contact with said bearing cylindrical surface, said bearing member having a vertical axially positioned bore to

conduct oil to said crankshaft end surface, said crankshaft having an axial bore in communication with said bearing member bore, said crankshaft having a first radial passage communicating at its inner end with said vertical axial bore and at its outer end with said crankshaft cylindrical bearing surface, said crankshaft cylindrical bearing surface having a partial annular groove extending from said first radial passage in a direction opposite the direction of rotation of said crankshaft partially around said cylindrical bearing surface, the opposite ends of said annular groove being spaced apart by a portion of said crankshaft cylindrical bearing surface, said crankshaft having a second bore therein parallel to the said axis and spaced therefrom to communicate with the upper end of said crankshaft, said crankshaft having a second radial bore extending from the





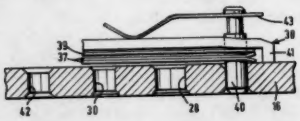
other end of said annular groove away from said first radial bore and communicating at its inner end to said second crankshaft bore, said second radial passage having a shorter length than said first radial passage, whereby oil entering said first axial bore passes upward and radially outward through said first radial passage to said partial annular groove to produce a first stage pumping as a result of centrifugal force, said oil passing around said annular groove whereby the friction between said annular groove and said bearing cylindrical surface provides increased pumping force on said oil, said oil passing inward from said other end of said partial annular groove through said second radial passage to said second vertical bore and upward in said second bore to the upper portion of said crankshaft.

4,325,680

VALVE SYSTEM FOR ENCAPSULATED MOTOR-COMPRESSOR UNITS

Alfredo Bar, Pavia, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy

Filed Dec. 9, 1980, Ser. No. 214,767
Claims priority, application Italy, Jan. 23, 1980, 42902 A/80
Int. Cl.³ F16K *15/14*
U.S. Cl. 417—569 **1 Claim**



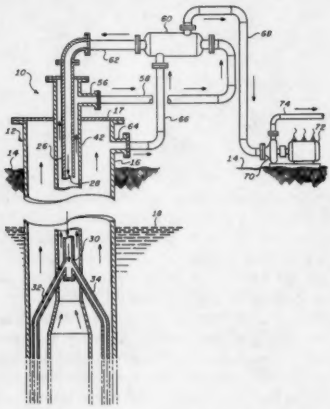
1. A valve sytem for encapsulated motor-compressor units comprising a cylinder, a piston moving with reciprocating motion in said cylinder, a valve plate which upperly closes said cylinder, a head fixed on to said valve plate, said valve plate defining therein two delivery ports having cross-sections of different size, and a delivery valve positioned over said delivery ports, said delivery valve comprising two pins attached to said valve plate, two laminae, a stop plate for said laminae, a crosspiece and retention spring, said laminae, stopplate, crosspiece, and retention spring being retained by said pins, said two delivery ports creating an asymmetric elastic deformation which favors gradual impact of said valve against said valve plate at the end of the compression cycle.

4,325,681

GEOTHERMAL IRRIGATION PUMP

Hugh B. Matthews, Worcester, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,952
Int. Cl.³ F03G *7/00*
U.S. Cl. 417—379 **8 Claims**



1. Apparatus for use in a well in order to pump a source of underground water to the earth's surface utilizing the thermal energy of a source of geothermal fluid, comprising:

first conduit means, disposed in said well, for conveying said underground water and a relatively small amount of said geothermal fluid to the earth's surface,

second conduit means, disposed within said first conduit means, having a heat transfer section for pressurizing and for conveying a working fluid therethrough in heat transfer relation with said source of geothermal fluid,

pump means disposed in said well and operatively coupled to said first conduit means for pumping the underground water and the relatively small amount of geothermal fluid to the earth's surface,

motive means operatively coupled to said pump means and responsive to said heated and pressurized working fluid in said second conduit for driving said pump means, and

means for condensing the working fluid exhausted from said motive means and for reinjecting the working fluid into said second conduit means.

4,325,682

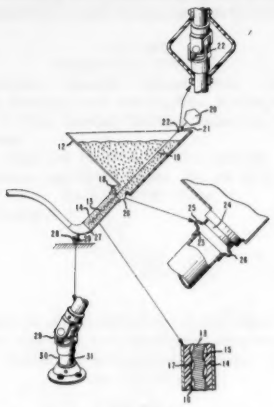
APPARATUS FOR DISCHARGING MATERIAL

Frank M. Willis, Wenonah, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1979, Ser. No. 102,903
Int. Cl.³ F04C *2/107, 5/00, 13/00*
U.S. Cl. 418—48 **10 Claims**

1. A progressing cavity pump for discharging material from

a hopper including an orbitable rigid stator connected to the hopper by a connecting means made of a flexible material and



an orbitable and rotatable rotor driven through a flexible joint positioned above the material to be discharged.

4,325,683

SCROLL-TYPE COMPRESSOR WITH ROTATION PREVENTION AND ANTI-DEFLECTION MEANS

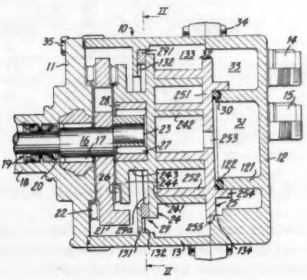
Kiyoshi Miyazawa, Annaka, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Filed Oct. 26, 1979, Ser. No. 88,583

Claims priority, application Japan, Oct. 30, 1978, 53-134173; Oct. 30, 1978, 53-134175

Int. Cl.³ F04C *18/02;* **F16D** *3/04*

U.S. Cl. 418—55 **7 Claims**



1. In a scroll-type fluid compressor unit of the type having a compressor housing with a front end plate and a rear end plate, a fixed scroll member fixedly disposed within said compressor housing and having first end plate means to which first wrap means are affixed, an orbiting scroll member orbitably disposed within said compressor housing and having second end plate means to which second wrap means are affixed, said first and second wrap means interfitting at a predetermined angular relationship at a plurality of line contacts to define at least one sealed off fluid pocket, a drive mechanism connected to said orbiting scroll member for transmitting the orbital motion to said orbiting scroll member, means for preventing rotation of said orbiting scroll member, and means for supporting a thrust force, the improvement which comprises: said drive mechanism including a drive shaft supported by a single first radial bearing means in said front end plate and extending outwardly through said front end plate, a disk rotor member mounted on an inner end of said drive shaft and supported by first thrust needle bearing means on an inner surface of said front end plate, and a drive pin axially projecting from a rear surface of said disk rotor member and being radially offset from said drive shaft, said orbiting scroll member being provided with an axial boss which is integrally formed on a surface of said second end plate member opposite said second wrap means and rotatably mounted on said drive pin which is fitted into said boss through second radial bearing means, and a radial flange portion being integral with and radially extending from, the projecting end of said axial boss and being supported by second thrust needle bearing means on the rear surface of said disk rotor member, whereby the axial force is supported on the inner surface of said front end plate through said radial flange portion, said second thrust needle bearing means, said disk rotor member and said first thrust needle bearing means so that deflection of the axis of said orbiting scroll member as well as said drive shaft is prevented, and said rotation preventing means are disposed around said axial boss.

4,325,684

BRICK MOLDING MACHINE

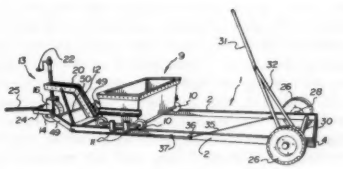
Rodger Blackwood, and John G. Medway, both of P.O. Box 1210, High River, Alberta, Canada

Filed Feb. 12, 1979, Ser. No. 11,128

Claims priority, application Canada, Oct. 31, 1978, 315610

Int. Cl.³ B28B *13/00*

U.S. Cl. 425—62 **2 Claims**



1. A mobile brick molding machine comprising a frame having an open bottom end;

mold means mounted in said frame for vertical movement therewith;

hopper means movably mounted on said frame means for filling said mold means with brick forming composition;

first wheel means for directly supporting one end of said frame for vertical movement with respect thereto, said first wheel means including

jack means for raising and lowering said one end of said frame, and

a ground engaging supporting wheel connected to said jack means;

second wheel means for directly supporting the other end of said frame for vertical movement with respect thereto, said second wheel means including

lever means for raising and lowering said other end of the frame,

ground engaging supporting wheels rotatably mounted on said lever means, and

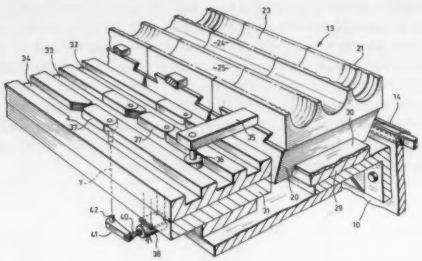
linkage means interconnecting said jack means and said lever means for operating said lever means such that raising said one end of said frame by said jack means results in simultaneous movement of said lever means and its wheels and raising of said other end of said frame by said lever means thereby moving said frame and said mold means from a first lower molding position to a second upper mold releasing position.

4,325,685

APPARATUS FOR PRODUCING THERMOPLASTIC TUBING HAVING INTERCHANGEABLE MOLD BLOCKS

Manfred A. A. Lupke, 35 Ironshield Crescent, and Gerd P. H. Lupke, 46 Stornoway Crescent, both of Thornhill, Ontario, Canada

Filed Sep. 12, 1980, Ser. No. 186,625
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—183 **8 Claims**



1. In an apparatus for producing thermoplastic tubing, the apparatus comprising a frame structure and a pair of complementary mold assemblies mounted thereon, each mold assembly comprising an endless chain of articulately interconnected mold units which are recirculated along an endless path defining a forward run and a return run, the mold units providing respective half molds cooperating in pairs along said forward run to define a longitudinally extending mold cavity, the improvement in which each mold unit comprises a rigid support member and a die member mounted thereon, the die member providing a plurality of transversely separated half molds, and said members providing respective interengaging guide means permitting transverse displacement of the die member for selectively moving the half molds thereof to a predetermined operative position, the apparatus further comprising selectively operable cam means mounted on said frame structure, said cam means being engageable with said die members along said return runs for displacing said die members thereby to bring the selected half molds thereof to the operative position, said frame structure further providing, for each mold assembly, a longitudinally extending guide member engaging said support members along the return run thereof, and a rigid support structure adjacent said guide member transversely spaced therefrom, said cam means comprising respective first cam means extending transversely from said die members, and selectively operable second cam means mounted on said support structure, said second cam means being selectively engageable with said first cam means for displacing said die members during such engagement.

4,325,686

APPARATUS FOR DENSIFYING POWDERS OF SUB-MICRON PARTICLE SIZE

Gonzalo S. Leon; John E. Fraize, both of Sudbury, Mass., and Richard C. Fortier, University City, Mo., assignors to Cabot Corporation, Boston, Mass.

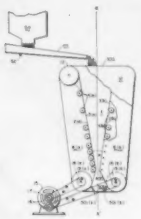
Filed Nov. 28, 1980, Ser. No. 211,379
Int. Cl.³ B29D *7/14*
U.S. Cl. 425—371 **13 Claims**

1. Powder densifying apparatus comprising: A plurality of densifying stations positioned about a common axis, each said station being defined by a pair of spaced-apart, parallel opposed support rolls, the gap between the rolls of each said station being sequentially decreased from station to station;

a gas permeable belt reeved over and supported spanwise by the support rolls positioned to the other side of said common axis, said reeved and supported belts together defining a convergent densifying zone;

means to enclose said convergent densifying zone whereby escape of powder material therefrom is prevented;

means to drive said gas permeable belts at substantially equal speeds toward the convergent end of said densifying zone; and



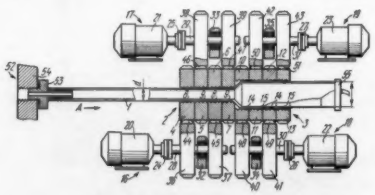
means to supply powder material into the divergent end of said convergent densifying zone at a rate sufficient to maintain a substantially complete fill thereof.

4,325,687

DEVICE FOR EXPANDING HEAT-SHRINKABLE POLYMER TUBES

Modest S. Akutin, B. Tishinsky pereulok, 26, korpus 16, kv. 16, Moscow; Sergei K. Dimakov, p/o Vozdvizhenskoe, poselok 1"A", Moskovskaya oblast, Zagorsky raion; Stanislav V. Ostapchuk, ulitsa Eletskaya, 9, korpus 3, kv. 415, Moscow; Boris P. Pashinin, Leningradskoe shosse, 112/1, korpus 4, kv. 1032, Moscow, and Vitaly P. Perepelkin, ulitsa Lobachevskogo, 10, kv. 60, Moscow, all of U.S.S.R.

Filed Jul. 1, 1980, Ser. No. 165,011
Int. Cl.³ B29C *17/07*; B29D *23/03*
U.S. Cl. 425—387.1 **1 Claim**



1. A device for expanding heat-shrinkable polymer tubes comprising:

an inlet chamber including adjoining bushes provided with threads at the inner surface thereof, adjacent pairs of said bushes having threads of opposite direction;

a first independent drive kinematically linked with said bushes having threads of a common direction to rotate said bushes;

a second independent drive kinematically linked with said bushes having threads of a direction opposite to the direction of the threads of said bushes driven by the first drive to rotate said bushes;

an outlet cooling chamber disposed coaxially and consecutively after said inlet chamber in the direction of advancement of said polymer tube and having a larger inner diameter than that of said inlet chamber, said outlet cooling chamber including adjoining bushes provided with threads at the inner surface thereof, adjacent pairs of bushes having threads of opposite direction;

a third independent drive kinematically linked with said bushes of said outlet cooling chamber having threads of a common direction to rotate said bushes;

a fourth independent drive kinematically linked with said bushes of said outlet cooling chamber having threads of a

direction opposite to the direction of said bushes driven by the third drive to rotate said bushes; and

means for creating overpressure inside said polymer tube.

4,325,688

MOLD EQUIPMENT

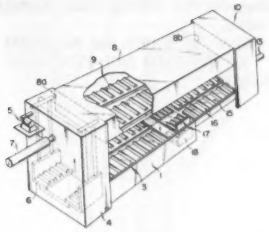
Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Goro Yoneyama, Kawagoe, and Junichi Seki, Kiyose, all of Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,282

Claims priority, application Japan, Jul. 16, 1979, 54-90011

Int. Cl.³ B29D *27/04*

U.S. Cl. 425—436 R **15 Claims**



1. A mold equipment using a metal mold, comprising:

a water tub for cooling a metal mold, said water tub having a metal mold transfer conveyor therein, said mold transfer conveyor having an inlet and an outlet side;

a first lift chamber having an inlet coupled to the outlet side of said mold transfer conveyor for receiving the metal mold and including a first lift in the first lift chamber for lifting the received metal mold to an upper outlet stage of the first lift chamber;

a ceiling oven including a conveyor and means for maintaining a hot curing atmosphere therein, said ceiling oven having an inlet coupled to said outlet stage of the first lift chamber for receiving a metal mold from the first lift chamber, said ceiling oven having an outlet side;

a first push-in cylinder coupled to the first lift chamber for transferring the metal mold from the upper outlet stage of the first lift chamber onto said conveyor of said ceiling oven;

a second lift chamber having an inlet coupled to the outlet side of said ceiling oven for receiving the metal mold from said ceiling oven, after being conveyed through said ceiling oven, and including a second lift in the second lift chamber for lowering the received metal mold to a lower outlet stage of the second lift chamber;

a mold release work station coupled to receive the metal mold from the lower outlet stage of the second lift chamber, said mold release work station including a conveyor receiving and conveying the metal mold received from the second lift chamber and means for releasing and removing a cured item from the received metal mold;

a second push-in cylinder coupled to said second lift chamber for transferring the metal mold from the lower outlet stage of the second lift chamber onto said conveyor of said mold release work station;

a third lift chamber for receiving the empty metal mold from the conveyor of the mold release work station, said third lift chamber having an outlet and including a third lift for lowering the empty metal mold to the outlet of the third lift chamber which is at a position corresponding to the position of the mold transfer conveyor in the water tub; and

a third push-in cylinder for transferring the empty metal mold onto the mold transfer conveyor of the water tub from said outlet of the third lift chamber for cooling of the metal mold in said water tub;

said conveyors of said water tub, of said ceiling oven and of said mold release work station being separate from each other and independent of each other.

4,325,689

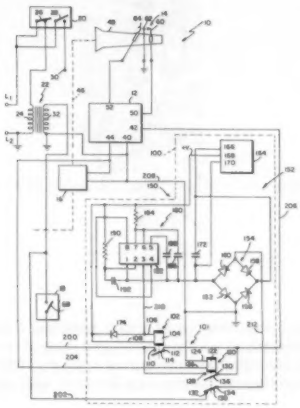
AUTOMATIC RESET CONTROL FOR DIRECT SPARK IGNITION SYSTEMS

James E. Burke, Indianapolis, Ind., assignor to Harold A. Teschendorf, Indianapolis, Ind.

Filed Mar. 28, 1980, Ser. No. 134,969

Int. Cl.³ H01M *2/40*

U.S. Cl. 431—70 **19 Claims**



1. In a fuel ignition system for a heating apparatus including a burner connected to a fuel supply, a fuel regulating valve, an electrode assembly, and a system control module for operating the fuel regulating valve and electrode assembly, the system control module being activated in response to a heat demand switch to open the valve and produce a spark for ignition of the burner during a predetermined time period and deactivated if the burner fails to ignite within such time period, the improvement comprising: reset means for automatically reactivating the system control module when the burner fails to ignite within the predetermined time period to again open the valve and produce a spark for the predetermined time period in response to the heat demand switch, the reset means including timing means for determining a time-delay period between deactivation and reactivation of the system control module, and function control means for activating the timing means when the system control module is deactivated and for activating the system control module after the time-delay period in response to a signal produced by the timing means.

4,325,690

GAS PILOT ASSEMBLY FOR UNIVERSAL APPLICATION AND METHOD OF MAKING SAME

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

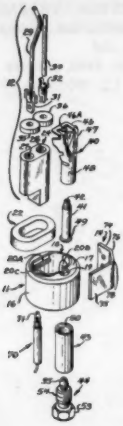
Filed Sep. 17, 1979, Ser. No. 76,519

Int. Cl.³ F23H *5/00;* **F23Q** *7/06, 9/00*

U.S. Cl. 431—78 **9 Claims**

1. A gas pilot assembly comprising: a base having a curved side wall portion and defining an opening in a surface transverse of said side wall; an electrode subassembly received in said opening of said base and including a ceramic body, at least one electrode received in said body and secured thereto by fused glass, and a connector on said electrode; fused glass means connecting said ceramic body to said base about said opening; a pilot tip and orifice subassembly secured to said base and including a tip extending upwardly of said base adjacent said electrode, means defining an orifice connected to said tip,

and means for connecting a source conduit to said orifice-defining means; and a mounting bracket including a mounting plate and a flat connecting flange, said flange being welded to the exterior of said curved side wall of said base and characterized in that the angular orientation and axial displacement of



said curved wall relative to said connecting flange and the angular orientation of the axis of said curved wall and said mounting bracket may be adjusted over a continuous range prior to welding said connecting flange to said side wall portion.

4,325,691

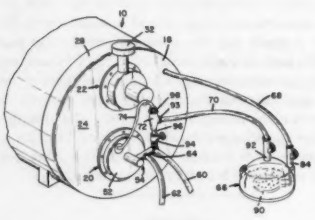
FURNACE INDUCTION SYSTEM

Alyce D. Evans, Shiremanstown, and John R. Hilty, Thomasville, both of Pa., assignors to Testco, Inc., Camp Hill, Pa.

Filed Mar. 10, 1980, Ser. No. 128,913

Int. Cl.³ F23L *9/00*

U.S. Cl. 431—190 **8 Claims**



1. An induction system for injection of a treated combustion gas into the combustion zone of a furnace having a combustion chamber, a fuel burner within the combustion chamber and a source of air having a pressure greater than the pressure within the combustion chamber during firing, the system comprising an air flow line extending from the source of air to the combustion chamber and having an end opening into the combustion chamber adjacent the combustion zone; a bubble chamber for bubbling air through a liquid to form a treated output gas, the bubble chamber including an inlet port and an outlet port; a venturi located within the air flow line adjacent the end of the line opening into the combustion chamber, the venturi including an inlet port, an outlet port and a low-pressure port, the inlet and outlet ports both located within the air flow line with the outlet port located closely adjacent the end of the line opening into the combustion zone so that air flows from the source through the venturi and into the combustion zone; a flow control device located in said line upstream of the venturi operable to restrict the flow of air through the line and venturi to the combustion chamber; and a gas flow line connecting the outlet port of the bubble chamber with the low-pressure port of the venturi whereby the flow of air from the source and through the venturi lowers the pressure at the low pressure port and pressure-draws the treated output gas from the bubble chamber into the venturi to mix nonmechanically with the flow of air delivered to the combustion zone and thereby improve combustion.

4,325,692

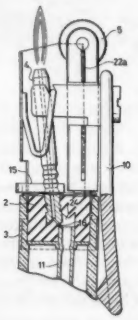
THROWAWAY TYPE GAS LIGHTER

Seiichi Kitabayashi, No. 919-12, Oaza Koshikiya, Ageo-shi, Saitama, Japan

Filed Jul. 9, 1979, Ser. No. 55,954

Int. Cl.³ F23Q *1/02;* **F17C** *13/00*

U.S. Cl. 431—254 **6 Claims**



1. A pen-shaped gas lighter comprising:

a hollow elongated body formed with a fuel tank terminating at one end in an opening;

an igniter mounted on said body;

a resilient outer valve member received in said opening and formed with a first port leading from said tank;

a rigid standpipe mounted on one end in said outer valve member and terminating at its lower extremity in a second port normally out of communication with said first port and selectively communicatable with said first port upon said standpipe being shifted from its upright position to a predetermined angle, said standpipe terminating at its upper extremity in a burner nozzle disposed adjacent said igniter;

a clip carriage movably mounted on said body for movement from an inoperative to an operative position, said carriage including pusher means coupled with said standpipe for shifting of said standpipe to said predetermined angle upon shifting thereof to said operative position;

a resilient clip carried on one end from said carriage and projecting along said body to yieldingly engage said body on its opposite end for selective receipt between said second end and body of a piece of clothing, said clip being further formed to serve as a thumb holder for pressing thereof to said carriage to said operative position; and,

biasing means connected with said standpipe for biasing said standpipe to said normal position whereby said clip may be utilized to clip said lighter to the pocket of a user's shirt for storage and when said lighter is to be used, it may be removed from said pocket and the user's thumb engaged with said clip to press said clip and shift said carriage to said operative portion to angle said standpipe to said predetermined angle and said igniter actuated to ignite fuel emitting from said burner nozzle.

4,325,693

DEVICE FOR HEATING OPEN MELTING BATHS

Werner Ackermann, Siegen-Trupbach, and Frohmut Vollhardt, Siegen-Bürbach, both of Fed. Rep. of Germany, assignors to SAG Siegener AG, Siegen-Gesweid, Fed. Rep. of Germany

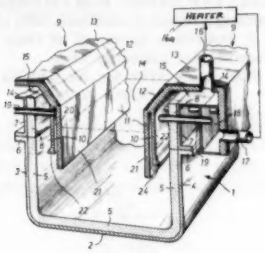
Filed May 18, 1979, Ser. No. 40,435

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822253

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.[3] F27B *3/00*; F26B *3/00*

U.S. Cl. 432—195 9 Claims



1. A device for heating open melting baths, especially galvanizing baths, enameling baths, lead coating baths, metal baths, and glass baths, which comprises:

a container having walls and adapted to receive a melting bath;

distributor chamber means arranged laterally of said container and passage means for communicating said distributor chamber means with a bath in said container;

inlet conduit means leading into said distributor chamber means for conveying a gas thereto;

withdrawal channel means also arranged partially within said container for receiving cooled gas from a bath in said container, said withdrawal channel means comprising at least one vertical ceramic partition spaced inwardly from said container walls and a wall overlying said container walls and attached to said partition, at least a portion of said passage being defined within said partition;

a heater in communication with said inlet conduit means; and

withdrawal conduit means for communicating said withdrawal channel means with said heater.

4,325,694

CYLINDRICAL FURNACE FOR TREATING MATERIALS AT HIGH TEMPERATURES AND PRESSURES

Carl Bergman, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

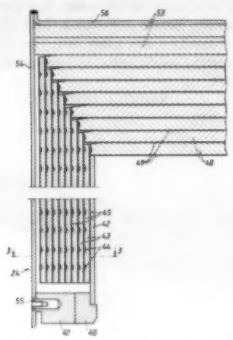
Filed Nov. 24, 1980, Ser. No. 209,683

Claims priority, application Sweden, Dec. 5, 1979, 7910022

Int. Cl.[3] F27D *1/00*; F67B *5/04*

U.S. Cl. 432—247 4 Claims

1. A vertical furnace for isostatic hot pressing, comprising a pressure chamber formed by a high pressure cylindrical cylinder and end closures extending thereinto, means for taking up axial forces exerted by a pressure medium acting against the end closures, and insulation means defining a furnace compartment and located within the interior of the pressure chamber, the improvement wherein said insulation means comprises a tubular insulating portion and a cover closing the upper end of said tubular portion, said insulating portion comprising an inner support tube of graphite material, a plurality of outer layers of heat insulating material surrounding said tube, means pressing said outer layers against one another and against the outer surface of said tube, first foils of graphite material having low gas permeability surrounding said tube and each of said layers, and said cover comprising a plurality of cover discs covering said tube and each of said layers, second foils of



graphite material being disposed on one of the sides of said discs.

4,325,695

DENTAL SALIVA EJECTOR

Bo Sundelin, 7, Södra Lundsgatan, 667 00 Forshaga; Bengt R. A. Wahlin, 8, Pejlingsgatan, 421 76 Västra Frölunda, and B. Göran Johansson, 19, Sövdeborgsvägen, 275 00 Sjöbo, all of Sweden

Filed Oct. 14, 1980, Ser. No. 196,981

Claims priority, application Sweden, Oct. 11, 1979, 7908449

Int. Cl.[3] A61C *17/04*

U.S. Cl. 433—91 4 Claims

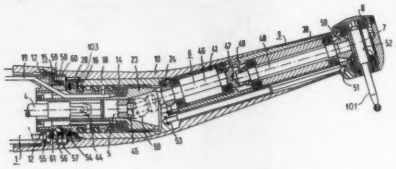
1. A dental saliva ejector, comprising:

a substantially tubular element having a straight part connected to a flexible hose or the like and extending outside the mouth of the patient and continuing in a suction part introduced in the mouth of a patient, said suction part having an upper portion substantially flowing in the active position of the ejector of the upper surface of the teeth of the mandible, and having a lower portion at the lower surface thereof provided to extend at least in part of its extension in close proximity to the mouth bottom of the patient, a suction opening in an upper surface of said lower and/or in the transition between said lower portion and said upper portion, a plurality of thin ribs bridging the distance between the upper and said lower portion, some of said ribs being located in a plane in front of a central plane through the section part and some of them behind said plane, said ribs being spaced and located to allow minor particles to pass between them and reach said suction opening but to prevent muceous membranes of the patient from coming in contact with said suction opening.

4,325,696
DENTAL HANDPIECE ARRANGEMENT

Otto Rosenstatter, Seeham, Austria, and Reinhard Straihammer, Einhausen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,138
Claims priority, application European Pat. Off., Nov. 29, 1979, 79104766
Int. Cl.³ A61C 1/12
U.S. Cl. 433—133 7 Claims

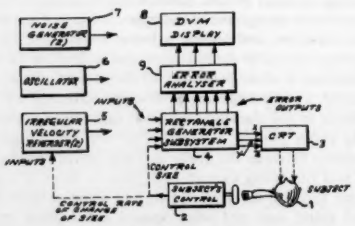


1. An angled handpiece arrangement being detachably connected to a housing of a drive motor and having a drive transmission for transmitting rotational motion of the drive motor to a chuck which rotatably supports a dental tool in a head of the dental handpiece arrangement, said handpiece arrangement comprising a sleeve member having means for forming a detachable connection to the housing of the drive motor, said sleeve member having a first portion for supporting a first drive shaft for rotation, said first drive shaft having a pair of coaxially arranged drive gears mounted on one end with each gear having a different number of teeth, said sleeve member having a second portion extending at an angle to the first portion and receiving a shank of a head of the dental handpiece arrangement, said shank and second portion having means for releasably connecting the shank in the second portion without any twisting therebetween, a second drive shaft being composed of two drive shaft sections interconnected in driving relation by two drive gears having a different number of teeth so that a change in the speed of rotation occurs between the two drive shaft section; and said second drive shaft being disposed in said shank with an end being engaged with one of the coaxial gears of the first shaft so that the axis of rotation for said pair of drive shaft sections lies on an axis extending at an angle to the axis of the first drive shaft.

4,325,697
METHOD AND APPARATUS FOR MEASURING HAND-EYE COORDINATION WHILE TRACKING A CHANGING SIZE IMAGE

David M. Regan, and Kenneth I. Beverley, both of Halifax, Canada, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 2, 1980, Ser. No. 193,048
Int. Cl.³ G09B 5/00
U.S. Cl. 434—258 19 Claims



1. The method of measuring a person's hand-eye coordination in tracking a changing-size image comprising the steps of

generating an image on a screen within the view of a person being tested,

varying the size of said image,

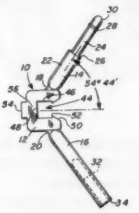
providing tracking means whereby said person, as a test procedure, tracks the changes in size of said image by effecting cancellation of image size change, and

comparing the resultant tracking response with image size change whereby the difference therebetween provides a measure of the person's hand-eye coordination.

4,325,698
MOLECULAR MODEL FOR CHEMISTRY

Stephen D. Darling; Aloysius A. Jendrisak, both of Silver Lake, and David J. Bokmiller, Akron, all of Ohio, assignors to Tacoma Products, Inc., Tallmadge, Ohio

Filed Jan. 8, 1980, Ser. No. 110,363
Int. Cl.³ G09B 23/26
U.S. Cl. 434—278 10 Claims



1. A molecular model building member comprising a main portion with two arms connected to and emanating outwardly from said main portion, said member being formed of relatively flexible material permitting said arms to be bendable relative to said main portion, one of said arms being comprised of a first section connected to said main portion and a second section connected to said first section so that said first section is interposed between said main portion and said second section, said second section of said one of said arms having an annular rib around the periphery thereof and having a smaller cross-section than said first section so as to form a first annular shoulder at their intersection, the other of said arms having a bore therein to receive the second section of said one of said arms of another of said molecular model building members and to frictionally engage the annular rib provided thereon.

4,325,699
SUCTION DEVICE FOR JET PROPULSION UNITS FOR A WATERCRAFT AND JET PROPULSION UNITS COMPRISING THE SAME

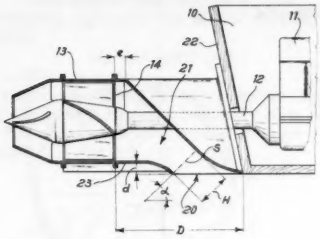
Luigi Castoldi, Abbiategrasso, Italy, assignor to Societa' Castoldi S.p.A., Milan, Italy

Filed Nov. 21, 1979, Ser. No. 96,560
Claims priority, application Italy, Nov. 29, 1978, 30331 A/78
Int. Cl.³ B63H 11/02
U.S. Cl. 440—47 20 Claims

1. A suction device for use in a boat jet propeller assembly of the type including a motor to be mounted forward of a stern transom of a boat, a pump assembly to be mounted aft of the stern transom, and a transmission connecting said motor to said pump assembly for rotation thereof to cause pumping of water and jet discharge thereof, said suction device comprising:

a suction conduit for conveying water to the pump assembly upon operation thereof, said suction conduit having a suction inlet adapted to be positioned substantially aft of the stern transom of the boat and a suction outlet adapted to be connected to an inlet cross-section of the pump assembly, said suction inlet adapted to be located in a generally horizontal plane substantially level with the bottom of the hull of the boat, said suction conduit having

a minimum height cross-section having a minimum dimension in a vertical plane passing through the axis of the boat, said minimum height cross-section being rectangular



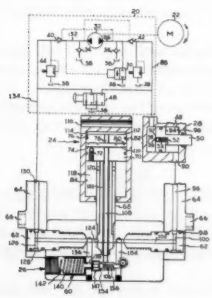
and lying in a plane passing through the rear edge of said suction inlet and extending perpendicular to the axis of said suction conduit, and the ratio of width to height of said minimum height cross-section being between 3 and 6.

4,325,700

POSITION-RETENTIVE VALVE SEAT FOR HYDRAULIC CYLINDER

Calvin V. Kern, Maumee, and Lawrence P. Zepp, Bowling Green, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed May 5, 1980, Ser. No. 146,891
Int. Cl.³ B63H 5/12
U.S. Cl. 440—61 **24 Claims**



12. A hydraulic cylinder, wherein:

said cylinder is provided with a bore therein;

a piston is slidably disposed inside said bore and separates said bore into a first chamber and a second chamber;

said piston being attached to a rod;

said rod protruding through said second chamber and outside said cylinder;

first and second valve means in said piston interconnecting said first and second chambers;

said first valve means preventing a flow of fluid in a first direction and allowing a flow of said fluid in second direction therethrough;

said second valve means preventing a flow of said fluid in a second direction and allowing a flow of said fluid in a first direction therethrough;

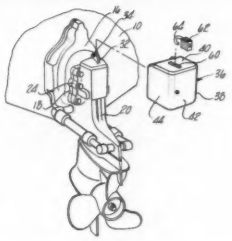
said first valve means and said second valve means being concentrically disposed in said piston.

4,325,701

PROTECTIVE DEVICE

James K. Peters, II, 4472 Toledo, Detroit, Mich. 48209, and Gus Metros, 21150 W. Outer Dr., Dearborn, Mich. 48124

Filed Oct. 29, 1979, Ser. No. 89,141
Int. Cl.³ B63H 21/26; F16F 15/00
U.S. Cl. 440—113 **5 Claims**



1. For use in conjunction with a marine vessel having an engine, transmission means operatively connected with the engine and having a portion which extends exteriorly of the vessel, and an out drive having a housing with a propeller rotatably mounted in the housing, said out drive housing having a mounting flange which registers with a mounting flange on the exteriorly extending portion of the transmission, said out drive being secured to said transmission means by removable fasteners extending through one of said mounting flanges and into the other mounting flange, said out drive having a mooring eye protruding from its top, a device to prevent the unauthorized removal of the out drive from the transmission means, said device comprising:

a housing comprising a plurality of walls fixedly secured together, one of said walls including a slot dimensioned to receive the mooring eye therethrough, said housing adapted to be positioned on the top of said out drive so that said mooring eye protrudes through said slot and so that at least a portion of the removable fasteners are positioned in between at least two of said walls and covered by said housing to thereby prevent the removal of the fasteners, and

means for removably locking said housing to said mooring eye against unauthorized removal.

4,325,702

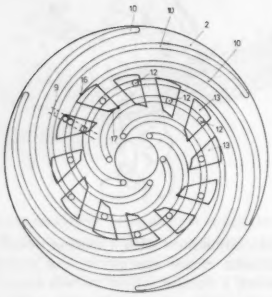
ADJUSTABLE PULLEY

Kurt A. G. Jacobsson, Ulricehamn; Lars H. G. Tholander, Huskvarna, and Ulf-Erik Wide, Asunden, all of Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Oct. 24, 1979, Ser. No. 87,832
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846279
Int. Cl.³ F16H 55/54
U.S. Cl. 474—56 **11 Claims**

1. A pulley with a variable working diameter, in particular a driving disk for the belt of a thread-delivery mechanism in textile machines, preferably knitting machines, including two coaxial disks which are rotatable relative to one another, of which the one has a radial guide groove and the other has at least one spiral-shaped guide groove, and a plurality of support members with a segment-like form which can be clamped between the disks in different positions so that their radially outer peripheral areas define a polygonal path which is similar to a circle, the support members having projections engaged in the guide grooves of both disks so that relative rotation of the disks moves the support members radially for changing the respective circle diameter, the improvement wherein each support member—viewed in the direction of the axis of rotation of the disks—has the shape of an asymmetrical circular-ring segment, the segment having a radially outer peripheral

surface which is adapted for engagement with the belt, the segment—when viewed in the direction of the axis of rotation—having longer and shorter diagonals which extend from the circumferentially opposite ends of the outer peripheral



surface, and wherein an extension of the longer diagonal is spaced from but passes by on the same side of the axis of rotation of the disks as a perpendicular to a tangent on the spiral-shaped guide groove in the area of the support member.

4,325,703

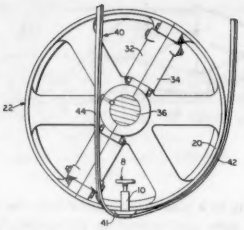
BELT GUIDING DEVICE

Charles O. Phillips, 1440 Alberta Dr., Hamilton, Ohio 45013

Filed May 15, 1980, Ser. No. 149,976

Int. Cl.³ F16H 7/08

U.S. Cl. 474—130 **1 Claim**



1. A device for guiding a belt during mounting of the belt on a pulley which comprises a body having slot means for receiving an edge portion of a belt supporting wall of the pulley and a face portion adjacent the slot means and substantially parallel with the slot means for receiving and supporting the belt, means for releasably attaching the device to the pulley with the edge portion of the pulley in the slot means and with the face portion adjacent to and outboard of a belt supporting pulley face of the belt supporting wall of the pulley, the face portion having an open end for discharging the belt from the device onto the belt supporting pulley face, side walls of the face portion converging toward the free end thereof to direct the belt toward the belt supporting face of the pulley, and lug means on the device limiting sliding of the belt on the face portion away from the open end thereof.

4,325,704

HAIR DYES

Günther Konrad, Hilden, and Edgar Lieske, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

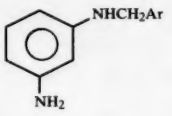
Filed Aug. 19, 1980, Ser. No. 179,436

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934330

Int. Cl.³ A61K *7/13*

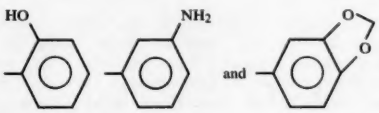
U.S. Cl. 8—407 16 Claims

1. A composition of the developer-coupler type for the dyeing of human hair, consisting essentially of, as coupler, at least one N-benzyl-m-phenylenediamine derivative of the general formula



(I)

wherein Ar is a radical selected from the group consisting of



(II) (III) (IV)

of a salt thereof, and, as developer component, one or more of the conventional developer components used in oxidation dyes, the molar ratio of the coupler to the developer being from about 2:1 to 1:2.

6. The composition of claim 1 which additionally contains conventional additives selected from the group consisting of conventional couplers and conventional directly absorbing dyes.

7. A process for the dyeing of hair comprising applying to said hair, at temperatures ranging substantially from about 15° C. to 40° C. for a time sufficient to effect dyeing through oxidation, an effective amount of the developer-coupler composition according to claim 1 in an aqueous medium.

4,325,705

ANTHRAQUINONE REACTIVE DYESTUFFS

Wolfgang Harms; Klaus Wunderlish, both of Leverkusen, and Klaus von Oertzen, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

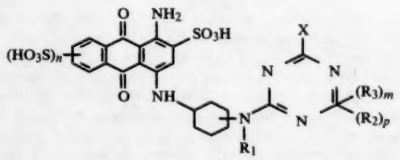
Filed Dec. 10, 1979, Ser. No. 101,614

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854482

Int. Cl.³ C09B *1/34;* C07D *251/38;* C07C *143/665*

U.S. Cl. 8—676 6 Claims

1. A dyestuff of the formula



wherein

n is 0 or 1,

m and p are 0 or 1 and m+p=1.

X is Cl or Br,

R_1 is H or C_1–C_4-alkyl optionally substituted by —OH, —OSO_3H, —COOH or —SO_3H,

R_2 is NH_2 or alkylamino, dialkylamino or aralkylamino which contains at least one SO_3H, OSO_3H or COOH group, and

R_3 is the same as R_2 or is optionally substituted arylamino and

when n is 0, p is 1 and when n is 1, m is 1.

4,325,706

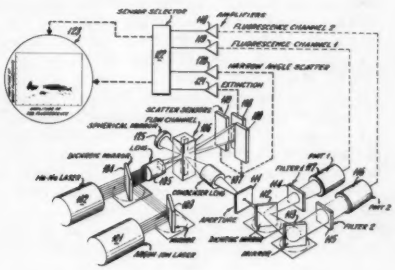
AUTOMATED DETECTION OF PLATELETS AND RETICULOCYTES IN WHOLE BLOOD

Russell J. Gershman; W. Peter Hansen, both of Middleboro; Alan M. Hochberg, Cambridge, and J. Garland O'Connell, Waltham, all of Mass., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Aug. 15, 1980, Ser. No. 178,486

Int. Cl.³ G01N *1/30, 21/25, 33/50*

U.S. Cl. 23—230 B 7 Claims



1. A method of identifying and enumerating platelet and reticulocyte cells in whole blood comprising the steps of:

(a) providing an aliquot from the blood to be studied;

(b) staining at least the reticulocyte and platelet cells of said aliquot with an acridine orange reagent;

(c) passing at least a portion of said aliquot, substantially a cell at a time through an area of focused optical stimulation, said area having a cross-sectional dimension comparable to the expected dimension of red cells;

(d) detecting light scattered by, and fluorescent light stimulated from cells in said area;

(e) identifying platelet identification criteria as a linear function of detected scattered light and detected fluorescent light;

(f) discriminating platelets from reticulocytes and red blood cells based on said identification criteria;

(g) providing an orthogonality correction at least as to fluorescent light detected from individual cells, based on scatter and fluorescent light detected from the cells;

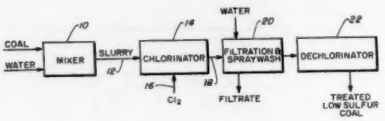
(h) defining fluorescent light threshold criteria separating red cells from reticulocytes; and

(i) identifying as reticulocytes those cells, platelets excluded, detected as issuing fluorescent light greater than said threshold criteria.

4,325,707
COAL DESULFURIZATION BY AQUEOUS CHLORINATION

John J. Kalvinskas, South Pasadena; Nick Vasilakos, Pasadena; William H. Corcoran, San Gabriel; Karel Grohmann, San Dimas, and Naresh K. Rohatgi, West Covina, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 12, 1980, Ser. No. 156,790
Int. Cl.³ C10L *9/02*
U.S. Cl. 44—1 SR **9 Claims**



1. A method of desulfurizing coal comprising the steps of:
suspending the coal in an aqueous medium consisting essentially of water to form a slurry;
chlorinating the coal slurry at a temperature below 130 degrees C. by bubbling chlorine gas into the slurry to form water soluble sulfur compounds; and
separating the chlorinated coal from the aqueous medium.

4,325,708
FUEL DETERGENT COMPOSITIONS CONTAINING LUBRICATING OIL

Lucien J. Bagnetto, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 9, 1977, Ser. No. 832,057
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—58 **6 Claims**

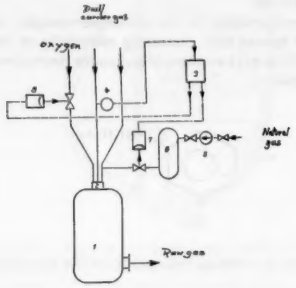
1. In combination (a) a motor fuel and (b) a fuel additive composition comprising (1) an amino succinimide fuel detergent and (2) a substantially paraffinic lubricating oil wherein the detergent composition is about 50 to about 80 percent by weight of the additive composition and the lubricating oil is about 50 to about 20 percent by weight of the additive composition wherein said total additive composition comprising detergent composition and lubricating oil is in an amount within a range of about 3 to about 215 g/m^3 of motor fuel.

4,325,709
METHOD FOR THE OPERATION OF GASIFICATION PLANTS FOR PULVERIZED FUELS

Peter Göhler, Freiberg; Peter Jaschke, Ossling; Horst Kretzschmer, Freiberg; Claus-Otto Kuhlbrodt, Freiberg; Klaus Lucas, Freiberg; Berthold Neumann, Hoyerswerda; Manfred Schingnitz; Hans-Joachim Schweigel, both of Freiberg; Friedrich Berger, Brand-Erbisdorf, and Dieter König, Freiberg, all of German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

Filed May 17, 1979, Ser. No. 40,052
Claims priority, application German Democratic Rep., May 31, 1978, 205679
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **10 Claims**

1. Method for the operation of gasification plants for pulverized fuels, of the type wherein pulverized fuel is supplied to a reactor by mechanical means or suspended in a combustible or non-combustible gaseous or liquid medium, and reacted, in a flame reaction with a gasifying agent containing free oxygen, into a combustible gas containing CO and H_2, the improvement comprising storing in a suitable reservoir a well-flowing additional fuel at a pressure higher than the operating pressure of the gasification plant; and transferring within a short time, in case of malfunctions in the supply of the pulverized fuel, said well-flowing fuel stored in the reservoir by the pressure within the reservoir into the reaction chamber of the gasification plant, wherein introduction of the aforenamed well-flowing fuel is made near the inlet location for the free-oxygen containing gasifying agent and wherein pressure, storage volume of the reservoir, and flow resistance of the connection between reservoir and the reaction chamber of the gasification reactor

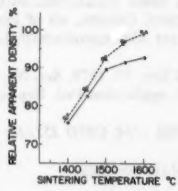


are in such relation that the quantity of well-flowing additional fuel transferred into the reaction chamber during the time interval between the start of a malfunction causing a shut off and the complete cut off of the supply of free oxygen will be greater than the quantity that is stoichiometrically required for the bonding of free oxygen flowing into the reaction chamber during this time interval.

4,325,710
SINTERED CERAMICS FOR CUTTING TOOLS AND MANUFACTURING PROCESS THEREOF

Hiroshi Tanaka, and Yoshihiro Yamamoto, both of Iwakura, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Mar. 11, 1980, Ser. No. 129,318
Claims priority, application Japan, Mar. 19, 1979, 54-33050
Int. Cl.³ B24D *3/16*; C04B *35/10, 35/52, 35/58*
U.S. Cl. 51—309 **30 Claims**



1. Vacuum-sintered ceramics having a mean alumina grain size of not exceeding 2 microns and a relative apparent density of not less than 98.5% of theoretical density for cutting tools obtained by sintering a pressed mixture substantially consisting of 80–95% by volume of alumina and the balance of titanium nitride and one or more zirconium-containing components selected from the group consisting of zirconium, zirconium carbide and zirconium nitride, wherein the volumetric ratio of titanium nitride/zirconium-containing component(s) ranges between 95/5 and 50/50, inclusively, under vacuum or vacuum inert atmosphere without applying pressure on said pressed mixture.

4,325,711
METHOD OF CONDITIONING FLUE GAS AND SEPARATING THE PARTICLES THEREFROM

Alfred E. Kober, Bridgewater, and Dennis F. Mahoney, Three Bridges, both of N.J., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed May 15, 1980, Ser. No. 149,961
Int. Cl.³ B03C 3/01; B01D 51/10
U.S. Cl. 55—5 **30 Claims**

1. A method of conditioning a particle-laden gas and minimizing the formation of deposits as a result thereof which comprises:

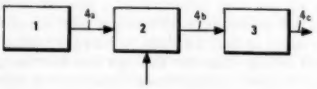
(1) Forming, at a temperature above 600° F., a mixture of the particle-laden gas and a conditioner comprising diammonium phosphate and urea, the urea being present in the conditioner in an amount by weight between 20% and 80% of the combined solids content of diammonium phosphate and urea, and

(2) Thereafter passing said mixture through a particle collector and separating said gas from the particles therein.

4,325,712
METHOD AND DEVICE FOR CONVEYING AN ESSENTIALLY GASEOUS FLUID THROUGH A PIPE

Marcel Arnaudeau, Paris, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 13, 1979, Ser. No. 11,818
Claims priority, application France, Feb. 14, 1978, 78 04331
Int. Cl.³ B01D 47/00
U.S. Cl. 55—48 **24 Claims**



15. A method for pressurizing and conveying a substantially gaseous fluid through a pipe, which comprises the steps of:

(a) equalizing the pressure of said substantially gaseous fluid with the pressure of a liquid with which it is to be mixed;

(b) mixing said pressure equalized substantially gaseous fluid with said liquid to produce a diphasic fluid comprising a mixture of a gas and a liquid, and simultaneously controlling the flow rate of the mixed liquid relative to the gas flow rate to obtain said diphasic fluid, with sufficient liquid being added so that a diphasic fluid is produced having a gas-to-liquid volumetric ratio substantially equal to the maximum value capable of being pumped by a pump capable of pumping and increasing the pressure of diphasic fluids;

(c) pumping and increasing the pressure of the diphasic fluid from step (b) with the pump capable of pumping and increasing the pressure of diphasic fluids for producing a pressurized diphasic fluid; and

(d) conveying the pressurized diphasic fluid from step (c) through the pipe.

4,325,713
AIR POLLUTION CONTROL PROCESS AND APPARATUS

Harvey S. Rosenberg, Columbus, Ohio, and Joseph M. Genco, Orono, Me., assignors to Industrial Resources, Inc., Chicago, Ill.

Continuation of Ser. No. 519,634, Oct. 31, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 930,296
Int. Cl.³ B01D 53/14; C01F 1/74
U.S. Cl. 55—73 **6 Claims**

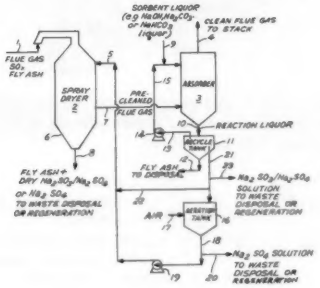
1. Method of removal of SO_x and fly ash particulates from hot flue gases comprising:

(a) passing said hot flue gases through a flue gases pretreatment and waste products dry collection zone;

(b) introducing an aqueous reaction products liquor containing ammonium or sodium sulfur oxide salts and at least a portion of said fly ash in a slurry form into said hot flue gases in a first portion of said pretreatment-dry collection zone in a finely divided condition and at a solids content sufficient to permit evaporation of substantially all of the water content of said liquor and produce dried particles of ammonium and sodium sulfur oxide salts;

(c) removing a first, major portion of said dried salts particles in association with fly ash in a second portion of said pretreatment-dry collection zone to produce a partially cleaned flue gas containing a minor portion of said dried salts particles, and said fly ash;

(d) introducing said partially cleaned flue gas containing said fly ash into a reaction zone;



(e) contacting said partially cleaned flue gas containing said fly ash in said reaction zone with an aqueous ammonium or sodium alkali SO_x sorbent liquor selected from NH_4OH, $(NH_4)_2CO_3$, NH_4HCO_3, NaOH, Na_2CO_3, $NaHCO_3$ and mixtures thereof for a time sufficient:

(i) to react SO_2 and SO_3 in said partially cleaned flue gas therewith to form said reaction products liquor and fly ash slurry;

(ii) to collect dried salts particles and said fly ash from said partially cleaned flue gas, and

(iii) to form substantially clean flue gas;

(f) exhausting said clean flue gas from said reaction zone; and

(g) passing reaction product liquor containing at least a portion of said fly ash in slurry form from said reaction zone to said pretreatment-dry collection zone.

4,325,714
MOUNTING ARRANGEMENT FOR ELECTROSTATIC PRECIPITATOR

James E. Wooldridge, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

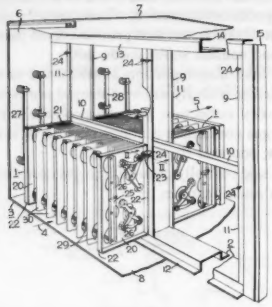
Filed Jan. 2, 1981, Ser. No. 222,039
Int. Cl.³ B03C 3/08, 3/12
U.S. Cl. 55—143 **6 Claims**

1. In an electrical precipitator for removing particulate materials from a dirty gas stream including a housing having an upstream gas inlet and a downstream gas outlet for the gas stream flowing through the precipitator, the improvement comprising:

electrode plate assembly means;

mounting means for supporting said electrode plate assembly means within the precipitator spanning the interior of the housing across the dirty gas stream, said mounting means having an opening accommodating gas flow through the precipitator between the gas inlet and the gas outlet;

a pair of pins projecting from said mounting means on opposite sides of the opening; and



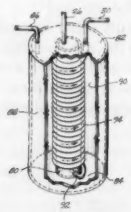
a pair of slots in said plate assembly means receiving said pins to suspend the plate assembly means in flow-through alignment with the opening.

4,325,715

APPARATUS FOR DEGASSING HEMODIALYSIS LIQUID

Donald B. Bowman, 7635 NW. McDonald Cir.; Charles J. Filz, and James G. Osborn, both of 1930 SE. Stone St., all of Corvallis, Oreg. 97330

Filed Mar. 24, 1976, Ser. No. 669,903
Int. Cl.[3] B01D *19/00, 31/00*
U.S. Cl. 55—158 **3 Claims**



1. Apparatus for removing gases from a hemodialysis liquid prior to introduction of such liquid into a hemodialyzer, comprising:

first wall means forming an inner fluid chamber having an inlet for receiving said gas-containing hemodialysis liquid;

second wall means forming, in conjunction with said first wall means, an outer fluid chamber surrounding said inner fluid chamber;

an enlongated length of tubing coiled around said first wall means, with one end of said tubing being in fluid receiving communication with said inner fluid chamber, said tubing being formed from a filter material that is not wetted by liquid and includes pores which normally remain open for passage of gas;

outlet means for degassed hemodialysis liquid connected to the second end of said tubing; and

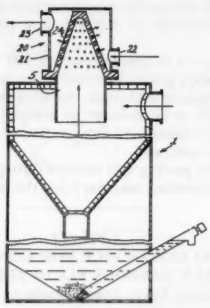
a gas outlet leading outwardly from said outer chamber, for exhausting released gases therefrom.

4,325,716

MIXING CHAMBER IN COMBINATION WITH A DUST CYCLONE SEPARATOR

Gerald S. V. Livemore, 121 Holt St., Parkmore, Transvaal, South Africa

Filed Aug. 15, 1980, Ser. No. 178,333
Int. Cl.[3] B01D *51/00;* **B01F** *3/02;* **C10K** *1/02*
U.S. Cl. 55—265 **4 Claims**



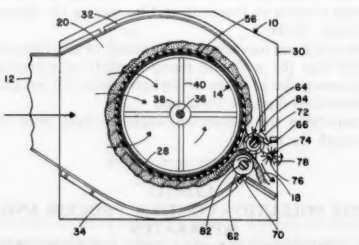
1. A bottom gas cyclone dust separator having a clean gas outlet adapted to receive the bottom gas from a gas producer and separate the dust from the bottom gas, in combination with a mixing chamber, said mixing chamber comprising a housing having a top gas inlet connected to a line conveying top gas from said gas producer, a bottom gas inlet connected to the clean gas outlet so that the clean bottom gas exiting therefrom enters said mixing chamber through said bottom gas inlet, a perforated hollow hood positioned inside said housing substantially covering said bottom gas inlet wherein bottom gas entering said housing is distributed directly into the gas fed into said mixing chamber through said bottom gas inlet.

4,325,717

SEAL PROTECTOR FOR AIR FILTERING APPARATUS

John E. Crowley, Jr., Charlotte, N.C., assignor to Continental Conveyor & Equipment Co., Winfield, Ala.

Filed Mar. 30, 1981, Ser. No. 248,146
Int. Cl.[3] B01D *33/10, 46/04*
U.S. Cl. 55—290 **3 Claims**



1. Apparatus for filtering air including a chamber having an air inlet and an air outlet,

a drum mounted for rotation within said chamber,

filtering media secured to the cylindrical surface of said drum,

means to cause a flow of particle ladened air into said chamber from said air inlet and into contact with said filtering media and to cause a flow of clean air from within said drum to exterior of said drum and said chamber through said air outlet,

seal means mounted on said chamber adjacent said drum to

preclude the flow of particle ladened air to exterior of said chamber other than through said filtering media,

means to remove bat formed of filtered particles from the filtering media on the surface of said drum, said last-mentioned means including a compression seal roller mounted for rotation out of contact with said drum and a doffing roller having flexible flights and mounted for rotation in contact with said drum to assist in removing bat from said drum and

means for protecting said seal means formed of durable material fixedly positioned between said seal means and the flights of said doffer roller adjacent the edge of said drum to eliminate wear on said seal means by the edges of the flights of said doffing rollers when rotating there adjacent.

4,325,718

SNAP TOGETHER POCKET FILTER ARRANGEMENT

Robert B. Burkhead, Shepherdsville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 4, 1981, Ser. No. 260,126
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—378 **6 Claims**

1. A pocket filter cartridge for removing particulate solids from a dirty gas stream, comprising:

a plurality of relatively flat, sheath-like filter bags open at one end;

a generally rectangular bag mounting frame adapted to be secured across the dirty gas stream;

said frame having outwardly projecting bead portions and inwardly projecting filter clamping portions extending about its periphery;

a plurality of generally rectangular clamping collars sized to be positioned across the frame in adjacent side-by-side relation;

each of said collars fitting in the open end of one of the filter bags and including inwardly projecting bead portions and outwardly projecting filter clamping portions disposed about its perimeter; and

clip means slidably engaged about the oppositely projecting bead portions of the adjacent collars and the frame in spring clamping fashion to secure each of the filters to the frame between the respective clamping flanges of the collars and the frame.

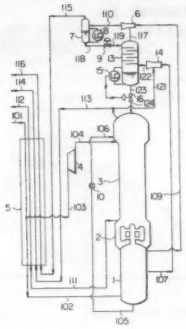
4,325,719

PROCESS FOR RECOVERING NITROGEN UNDER PRESSURE IN AIR SEPARATION APPARATUS

Masahiro Yamazaki, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,097
Claims priority, application Japan, Sep. 19, 1979, 54-119424
Int. Cl.³ F25J *3/04*
U.S. Cl. 62—30 **2 Claims**

1. In a process fo recovering nitrogen under pressure in an air separation apparatus comprising a duplex type rectification tower having a lower column and an upper column, wherein air is separated into oxygen and nitrogen by a cryogenic process, and the separated oxygen and nitrogen are recovered, the improvement which comprises increasing the pressure of the pure nitrogen gas withdrawn from the upper column by withdrawing the pure nitrogen gas by an ejector receiving pure liquid nitrogen directly from the top of the lower column, introducing the resulting gas-liquid mixture into a liquid gas-separator unit, recovering pure nitrogen gas at the increased pressure by liquid-gas separation in the separator unit, and



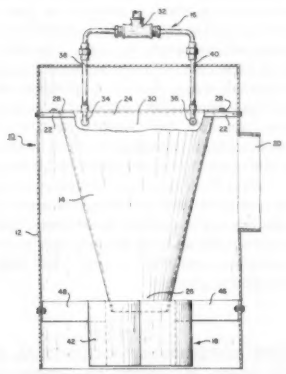
returning liquid nitrogen from the separator unit to the upper column as a reflux.

4,325,720

SHAPER NOZZLE FOR A CARBON DIOXIDE SNOW CYCLONE SEPARATOR

Peter A. Students, West Chester, Ill., assignor to Chemetron Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,110
Int. Cl.³ F25J *1/00*
U.S. Cl. 62—35 **6 Claims**



1. A nozzle for shaping the violently swirling carbon dioxide snow discharge from a carbon dioxide snow cyclone separator to form a non-diverging, unidirectional flow, said nozzle comprising:

an elongate body adapted to be disposed in a longitudinally upright position beneath said cyclone separator; and

a passage extending lengthwise through said body for receiving the carbon dioxide snow discharge from said separator, said passage having a scalloped transverse cross-section for reshaping said discharge as the latter flows through said passage,

the lateral boundary of said passage being defined by an annular series of elongate, transversely concave, juxtaposed cylindrical surfaces formed in said body,

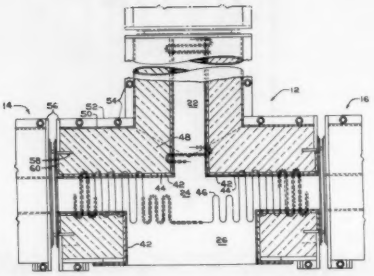
each of said surfaces extending through an arc of predetermined radians,

the sum of the arcs of all the surfaces in said series being greater than 2π radians.

4,325,721
HIGH PRESSURE MODULAR FOREHEARTH

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1980, Ser. No. 193,201
Int. Cl.[3] C03B 37/025
U.S. Cl. 65—1 13 Claims

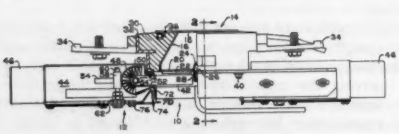


1. A modular forehearth for use in supplying molten glass from a pressurized source of molten glass to a plurality of pressurized glass fiber forming bushings comprising a transition module having a glass conduit therein connected at one end to a glass canal positioned in said transition module, said canal extending horizontally in at least two directions to provide at least two arms for said canal in said transition module, insulation surrounding said transition module, means to control the temperature of said transition module, means on the bottom of said transition module to connect a glass fiber forming bushing thereto and to establish fluid communication from said canal to said bushing, means to connect the ends of each of said arms of said glass canal to horizontally disposed first and second forehearth modules, each of said forehearth modules being provided with a horizontally disposed glass canal constructed to communicate with the transition module canal when the forehearth modules are connected thereto, each of said forehearth module canals being insulated and being provided with means to control the temperature thereof, means on the bottom of each of said forehearth modules to connect a fiber forming bushing thereto and to establish fluid communication between the forehearth canal and said bushing and means at the other end of said glass conduit to connect said glass conduit to a pressurized source of glass.

4,325,722
BUSHING ENVIRONMENT CONTROL ASSEMBLY

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 8, 1981, Ser. No. 223,525
Int. Cl.[3] C03B 37/025
U.S. Cl. 65—12 9 Claims



1. A bushing environment control assembly for controlling the environment in the attenuation zone of a glass fiber filament forming bushing, said bushing environment control assembly comprising:

a fin cooler assembly secured beneath said bushing in the direction of travel of the filaments being formed, said fin cooler assembly having a plurality of spaced fin plates extending into the attenuation zone;

a plenum chamber adjacent said attenuation zone, said fin plates having first ends positioned in said plenum chamber;

means for supplying a coolant gas to said plenum chamber;

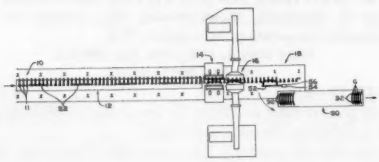
means for allowing flow of a first portion of said coolant gas into said attenuation zone; and

means for allowing flow of a second portion of said coolant gas in the direction of travel of the filaments being formed.

4,325,723
TRANSFERRING RIGID SHEETS FROM ONE CONVEYOR TO ANOTHER

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1980, Ser. No. 210,711
Int. Cl.[3] C03B 23/03, 27/00
U.S. Cl. 65—104 10 Claims



1. A method of treating rigid sheets comprising conveying a series of said sheets in end to end relation while suspended from tongs along a first path extending through a hot atmosphere for sufficient time to heat each sheet in turn to an elevated temperature sufficient for tempering and then through a first cooling area, applying cold tempering medium toward said conveyed sheet at a rate sufficient to impart at least a partial temper to said sheet, while the sheet is conveyed through said first cooling area at the downstream end of said first path,

clamping said sheet after it is conveyed through said first cooling area,

relaxing said tongs to release said sheet from said tongs,

lowering said clamped sheet so that its upper edge is below said tongs,

pivoting said clamped sheet approximately 90 degrees about a vertical axis outside said sheet,

transferring said clamped sheet onto a second path whose upstream end is transverse to the downstream end of said first path and which extends parallel to said first path through a second cooling area,

releasing said clamped sheet so that it is supported on its bottom edge for conveyance along said second path in a direction approximately parallel to that of said first path, and

conveying said released sheet in a broadside direction along said second path for further cooling in said second cooling area,

the total length of said first path and said second path required to handle a predetermined number of sheets being less than that required for conveying said sheets in the same end to end relation through both said paths.

4. Apparatus for treating rigid sheets comprising:

a first conveyor extending from its upstream end to its downstream end to define said first path,

a second conveyor extending approximately parallel to said first conveyor from its upstream end to its downstream end to define said second path,

the upstream end of said second conveyor being transversely aligned with the downstream end of said first conveyor,

sheet transfer and pivot means for transferring at least one of

said sheets from the downstream end of said first conveyor to the upstream end of said second conveyor,

a plurality of tong-supporting carriages arranged for movement along said first conveyor,

tongs supported by said carriages adapted to engage the upper portion of at least one of said sheets,

said sheet transfer and pivot means comprising sheet clamping means, means to disengage said tongs from said upper portion after said sheet clamping means clamp said sheet, means to lower said sheet clamping means to move the upper edge of said sheet to a position below that occupied by said disengaged tongs,

means to pivot said sheet approximately 90 degrees about a vertical axis offset from the position occupied by said sheet at said sheet transfer and pivot means and simultaneously transfer said sheet from the downstream end of said first path at an orientation parallel to said first path to the upstream end of said second path at an orientation transverse to said second path while said sheet is clamped between said clamping means,

means to release said clamping means to support said sheet with its lower edge engaged by said second conveyor, and

means for moving said glass sheet broadside of said second path while supported on said second conveyor.

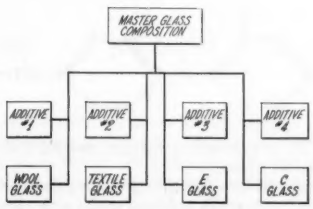
4,325,724
METHOD FOR MAKING GLASS

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 680,841, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 624,616, Oct. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 526,876, Nov. 25, 1974, abandoned. This application Oct. 6, 1977, Ser. No. 841,860

Int. Cl.³ C03B *5/16*

U.S. Cl. 65—121 **7 Claims**



1. A process for forming a borosilicate glass fiber of a predetermined chemical composition containing 5–15% B_2O_3 comprising:

(a) separating the batch ingredients for said predetermined fiber composition into ingredients for forming a host glass and for forming a B_2O_3-containing additive glass, said host glass having a higher liquidus than said additive glass and said additive glass being more corrosive than said host glass;

(b) melting said ingredients for forming said host glass in a horizontally disposed, continuous flow, main-melter;

(c) flowing said molten host glass from said main melter to a location where said fibers are formed;

(d) separately melting said additive glass and combining, with forceful mechanical mixing, said molten additive glass with a larger portion of said molten host glass prior to said fiber forming location to form a fiberizable borosilicate glass, and

(e) forming said borosilicate fiber at said fiber forming location from said fiberizable glass, at least a major proportion of the B_2O_3 content of said fiber being supplied by said additive glass, said melter exhibiting longer life and the volatilization losses of B_2O_3 being substantially less than that obtained when melting the ingredients of said additive and host glass together in said melter.

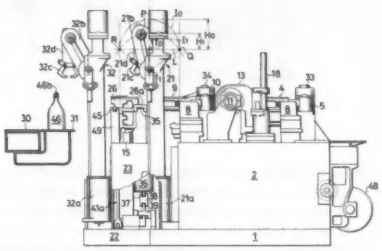
4,325,725
APPARATUS FOR PRODUCING GLASS BOTTLES

Masami Fujimoto, Nishinomiya, Japan, assignor to Yamamura Glass Kabushiki Kaisha, Nishinomiya, Japan

Filed Oct. 7, 1980, Ser. No. 194,905

Int. Cl.³ C03B *9/44*

U.S. Cl. 65—230 **3 Claims**



1. In an apparatus for producing glass bottles including,

parison forming means for forming a gob into a parison, the forming means being provided with a parison forming mold openable for taking out the parison,

reheating and intermediate forming means for receiving the parison from the forming means and reheating, or reheating and intermediately forming the parison, the reheating means having an intermediate forming member provided for enclosing the parison in a confined space,

final shaping means for receiving the reheated parison or intermediately formed piece from the reheating and intermediate forming means and shaping the same into a bottle, the shaping means having a finishing mold openable for removing the bottle,

a transfer assembly for transferring the parison from the parison forming means to the reheating and intermediate forming means,

a takeout for transferring the reheated parison or intermediately formed piece from the reheating and intermediate forming means to the final shaping means, and

a takeout for removing the finished bottle from the final shaping means, the improvement comprising at least said first-mentioned takeout being a rotatably movable arm pivotally mounted on said apparatus, a holder for said parison or formed piece mounted on said arm at a support point, the pivotal axis of said arm being located below a straight line through two points between which said support point of said holder on said arm moves for transferring said parison or formed piece, and means to rotate said arm.

4,325,726
DOUBLE JAWED SHAPING TOOL FOR GLASS VIALS

Ralston G. Edwards, Newfield; Albert S. Goffredi, Vineland; John Lisi, Newfield, and Gregory Murphy, Erial, all of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 11, 1980, Ser. No. 186,056

Int. Cl.³ C03B *23/09*

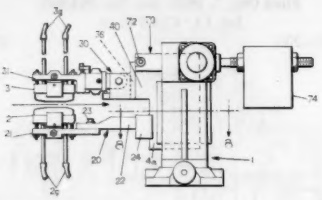
U.S. Cl. 65—298 **8 Claims**

1. Apparatus for forming the external contour of a heated tubular glass element comprising, in combination:

(1) means for concurrently rotating the tubular element and moving same in a linear path;

(2) a pair of forming tools constructed and arranged to engage opposite sides of the rotating glass element to form a desired external contour thereon;

(3) a support arm assembly for each forming tool;
(4) a plate element mounted for vertical movements adjacent said linear path;
(5) each said support arm assembly being secured to said plate element to position said forming tools respectively above and below said linear path and to move vertically concurrently with said plate element, and



(6) adjustable means operatively connected to said plate element to counter balance the total weight of said plate element, arm assemblies and said forming tools so that said forming tools are freely concurrently vertically movable by a rotating glass element moving therebetween.

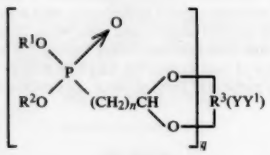
4,325,727

PLANT GROWTH REGULANT PHOSPHONOACETALS

David Vofsi; Martin M. Halmann, and Shaul Yanai, all of Rehovot, Israel, assignors to Yeda Research and Development Company, Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 858,901, Aug. 12, 1977, Pat. No. 4,207,417. This application May 8, 1979, Ser. No. 37,111
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.³ A01N *57/16;* **C07H** *13/00;* **C07D** *319/04, 317/12*
U.S. Cl. 71—86 **15 Claims**

1. A phosphonoacetal of the formula



wherein
R^1 is an alkyl group having from 1–3 carbon atoms;
R^2 is selected from the group consisting of hydrogen and the cations NH_4^+, Na^+, K^+, Ca^{2+}, Cu^{2+}, and R^1;
n is an integer from 0 to 2;
q is an integer from 1 to 3;
R^3 is a residue of a polyhydric alcohol having from 2–6 carbon atoms;
Y and Y^1 are each hydrogen hydroxyl, carbinol, methyl halogen, or methyl carbamoyl.

13. A plant growth regulating composition containing or agricultural carrier and as active ingredient an effective quantity of a compound defined in claim 1.

4,325,728

HERBICIDAL COMPOSITIONS CONTAINING N-(3-TRIFLUOROMETHYL-1,2,4-THIADIAZOLYL-5)-N'-METHYL-N'-METHOXY UREA AND α-[4-(3'-5'-DICHLOROPYRIDYL-2'-OXY)-PHENOXY]-PROPIONIC ACID PROPARGYL ESTER FOR CONTROL OF WEEDS IN WHEAT CULTURES

Marco Quadranti, Brugg; Willy Maurer, Riehen, and Kurt Maag, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 56,669, Jul. 11, 1979, Pat. No. 4,272,281. This application Oct. 6, 1980, Ser. No. 194,093
Claims priority, application Switzerland, Jul. 20, 1978, 7837/78
Int. Cl.³ A01N *43/02, 43/40*
U.S. Cl. 71—90 **2 Claims**

1. A herbicidal composition for the selective post-emergence control of weeds in wheat cultures which consists essentially of an effective amount of the mixture of (1) N-(3-trifluoromethyl-1,2,4-thiadiazolyl-5-)-N'-methyl-N'-methoxyurea and α-[4-(3'-5'-dichloropyridyl-2'-oxy)-phenoxy]-propionic acid propargyl ester, in which the ratio of the urea to the ester is from 1:10 to 5:10, and (2) an inert carrier.

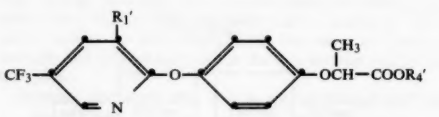
4,325,729

HERBICIDAL AND PLANT GROWTH REGULATING PYRIDYLOXY-PHENOXY-PROPIONIC ACID DERIVATIVES

Hermann Rempfler, Ettingen; Rolf Schurter, Binningen, and Werner Föry, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 860,409, Dec. 13, 1977. This application Nov. 13, 1980, Ser. No. 206,518
Int. Cl.³ A01N *43/40;* **C07D** *213/64*
U.S. Cl. 71—94 **17 Claims**

1. A compound of the formula



wherein R_1' is hydrogen or halogen; and R_4' is C_1–C_{18}-alkyl substituted by cyano.

13. A method for selectively combating weeds in cultivated crops which comprises applying to the area to be treated a herbicidally effective amount of a compound according to claim 1.

4,325,730

PROCESS FOR CONDITIONING SLAG DURING THE REFINING OF A METAL BATH

Francois Schleimer, Dudelange; Romain Henrion, Esch, Alzette; Ferdinand Goedert, Dudelange; Lucien Lorang, Differdange, and Jean Baumert, Esch, Alzette, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Nov. 6, 1980, Ser. No. 204,537
Claims priority, application Luxembourg, Nov. 7, 1979, 81859
Int. Cl.³ C21D *11/00;* **C21C** *5/32, 5/34*
U.S. Cl. 75—52 **6 Claims**

1. In a process for refining an iron melt in a crucible overlain by a slag layer tending upon oxidation of the slag to assume a frothy nonfluid consistency, the improvement which comprises, in combination, the steps of:
(a) blowing oxygen onto the top of said melt from a lance head disposed thereabove;
(b) continuously measuring the flowability of said layer of slag and the level of said layer and the speed of decarburization of the bath; and
(c) bubbling an inert gas into said melt from the bottom of said

crucible at a rate of flow controlled in response to the measurements obtained in step (b) to maintain the level of the slag at a predetermined distance from said head of said lance while preventing said slag from frothing and the decarburization at a maximum under the condition of maintaining the level of said slag at said predetermined distance from said head and said slag in a nonfrothy character.

4,325,731
PROCESS OF PRODUCING REDUCING GAS FROM SOLID FUELS

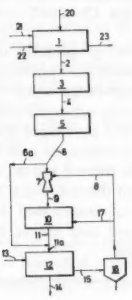
Paul Becker, Eschborn; Heinz Jockel, Büttelborn; Paul Rudolph, Bad Homburg, and Manfred Kühn, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,576

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911692

Int. Cl.³ C21B *13/00*

U.S. Cl. 75—91 **4 Claims**



1. A process for reducing an ore which comprises:

(A) at a pressure of 5 to 50 bars gasifying a solid carbonaceous granular fuel by contacting the same in a fixed bed with oxygen and steam fed into the lower portion of said fixed bed;

(B) scrubbing the gas produced from said gasification and cooling it to temperature of about 150° to 200° C., said cooled gas containing hydrogen, carbon monoxides, methane, water vapor and tar, subjecting said gas to shift conversion in order to adjust the residual carbon monoxide content to 1 to 10 percent by volume of dry gas;

(C) scrubbing the gas from shift conversion to remove sulfur compounds and to reduce the CO_2 content to no more than 3 percent by volume whereby to provide a scrubbed gas containing more than 70 percent by volume hydrogen and carbon monoxide which gas contains more than 6 percent by volume methane;

(D) admixing at least part of the so-scrubbed gas with reduction process exhaust gas formed by reduction of ore;

(E) reforming the resultant mixture of gases at a pressure of 1.5–10 bars at a temperature of 800° to 1500° C. thereby producing a reformed gas predominantly containing hydrogen and carbon monoxide;

(F) feeding at least a portion of said reformed gas containing up to 3 percent by volume CO_2 and up to 5 percent by volume methane as a reducing gas at 700°–1000° C. to an ore-reducing plant, therein contacting said ore therewith and withdrawing exhaust gas from said plant and feeding at least part of said exhaust gas into step D.

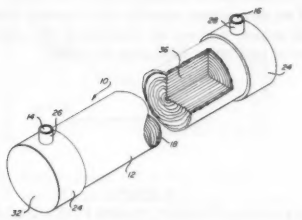
4,325,732
PRECIOUS METAL RECOVERY CARTRIDGE AND METHOD

Manfred J. Woog, 1960 B St., Craig, Colo. 81625

Filed Dec. 29, 1980, Ser. No. 220,692

Int. Cl.³ C22B *11/04*

U.S. Cl. 75—109 **22 Claims**



1. An apparatus for the recovery of a metal in a recovery-metal bearing solution by reaction with a replacement metal of higher electromotive force, comprising;

a housing having inlet and outlet means spaced apart thereon; and

an exchange mass carried in said housing at least between said inlet and outlet means, wherein said exchange mass comprises a resilient fibrous support structure in generally spiral configuration and capable of flexing under fluid pressure to prevent clogging by deposited recovered metal, and a plurality of finely divided particles of replacement metal carried in dispersed relationship within said support structure and generally following the spiral configuration of the support structure;

wherein said housing defines an inlet cavity immediately adjacent to said inlet means at a first axial end of the housing and further defines an outlet cavity immediately adjacent to said outlet means at a second and opposite axial end of said housing, and wherein said exchange mass is carried within the housing between said inlet and outlet cavities with the axis of said spiral support structure substantially parallel with the axis of the housing, whereby, in use, flow of recovery-metal bearing solution between said inlet and outlet cavities is in a flow path substantially entirely parallel to said spiral layers of support structure and replacement metal particles for exposure of replacement metal to recovery-metal bearing solution substantially continuously, and, whereby, said support structure is capable of resilient flexing in response to obstruction of said flow path.

18. The method of recovering a metal from a recovery metal-containing solution, comprising:

providing a mat of resilient fibrous material;

dispersing finely divided particles of a replacement metal over the surface of said mat, wherein the replacement metal is higher in the electromotive force series than the recovery metal;

adhesively attaching said particles to the mat;

rolling said mat into a spiral;

inserting said spiral roll into a housing having an inlet communicating with one axial end of the spiral roll and an outlet communicating with the second axial end of the spiral roll;

directing a recovery metal-containing solution into the housing through said inlet for axial passage through the spiral roll and replacement reaction recovery of recovery metal by exchange with said replacement metal particles; and

discharging the resultant solution from said outlet.

4,325,733

AMORPHOUS CO-TI ALLOYS

Joseph A. Aboaf, Peekskill, N.Y., and Erik Klokholm, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,113
Int. Cl.[3] C22C 19/00
U.S. Cl. 75—170 13 Claims

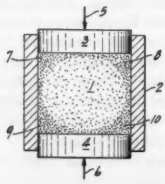
1. In a cobalt titanium metallic alloy, the improvement consisting of an amorphous metallic alloy having between about 14 and 30 atomic percent of titanium in the alloy, with the remainder of said alloy consisting of cobalt.

4,325,734

METHOD AND APPARATUS FOR FORMING COMPACT BODIES FROM CONDUCTIVE AND NON-CONDUCTIVE POWDERS

Lawrence M. Burrage, S. Milwaukee, Wis., and Jacques P. Guertin, Cupertino, Calif., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 27, 1980, Ser. No. 134,645
Int. Cl.[3] B22F 3/14
U.S. Cl. 75—225 52 Claims



1. The method of forming a compact body of powdered material comprising the steps of at least partially filling a die cavity with powdered material, while retaining said die cavity in a protective inert atmosphere, locating the die cavity including the powdered material within a vacuum chamber, forming a predetermined vacuum in said chamber sufficiently high to remove essentially all free gases from within said powdered material, slowly heating the die cavity and powdered material to less than the melting temperature of the powdered material, to a sintering temperature, and closing the die cavity to incrementally compress the powdered material, while maintaining said predetermined vacuum and said sintering temperature, thereby to form said compact body.

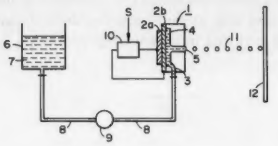
4,325,735

RECORDING LIQUID COMPOSITION

Tokuya Ohta, Yokohama; Tsuyoshi Eida, Chiba; Yasuhiro Yano, Naka; Yohji Matsufuji, Tokyo, and Masahiro Haruta, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1980, Ser. No. 159,247
Claims priority, application Japan, Jun. 22, 1979, 54-78954; Jun. 27, 1979, 54-82086; Jun. 27, 1979, 54-82087
Int. Cl.[3] C09D 11/02
U.S. Cl. 106—22 19 Claims

1. A recording liquid composition comprising an aqueous liquid medium containing a water-soluble dye, which comprises a nitrogen-containing heterocyclic ketone compound



and a member selected from the group consisting of urea and thiourea.

4,325,736

PROCESS FOR PREPARATION OF AE CONCRETE OR AE MORTAR

Eisaburo Okada, Wakayama, and Koji Sakagami, Kainan, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 110,061
Claims priority, application Japan, Jan. 17, 1979, 54-4111
Int. Cl.[3] C04B 21/00
U.S. Cl. 106—88 12 Claims

1. A process for the preparation of AE concrete or AE mortar, which comprises incorporating in a hydraulic cement composition (A) a high-range water-reducing agent for concrete and (B) a foaming substance consisting essentially of a mixture of (1) 85 to 93% by weight of a reaction adduct of (a) an α,β-unsaturated dicarboxylic acid having 4 to 12 carbon atoms or an anhydride thereof and (b) an alkene having 6 to 18 carbon atoms, or a salt thereof, and (2) 7 to 15% by weight of a polymer of said α,β-unsaturated dicarboxylic acid or an anhydride thereof, and said alkene having 6 to 18 carbon atoms, or a salt thereof.

4,325,737

METAL-DOPED ORGANIC FOAM

James A. Rinde, Livermore, Calif., assignor to The United States Department of Energy, Washington, D.C.

Division of Ser. No. 26,505, Apr. 3, 1979, Pat. No. 4,261,937.
This application Oct. 16, 1980, Ser. No. 197,465
Int. Cl.[3] C08L 1/12, 1/08
U.S. Cl. 106—122 2 Claims

1. A metal-doped organic foam of cellulose acetate or polyacrylonitrile having a density in the range of about 0.05 to about 0.4 gm/cm^3, a cell size of about 2 to 10 micrometers, and metal loading of up to about 1.0 gm of metal per cm^3 of foam, said metal being selected from the group consisting of RbF, NaCl, and KCl.

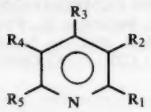
4,325,738

TERTIARY NITROGEN HETEROCYCLIC MATERIAL TO REDUCE MOISTURE-INDUCED DAMAGE IN ASPHALT-AGGREGATE MIXTURES

Henry Plancher, and Joseph C. Petersen, both of Laramie, Wyo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 15, 1981, Ser. No. 225,219
Int. Cl.[3] C09D 3/24
U.S. Cl. 106—273 N 15 Claims

1. An improved bituminous binder composition, comprising:
a bituminous material; and
a minor amount of a moisture damage inhibiting agent selected from compounds having the formula:



wherein R_1, R_2, R_3, R_4 and R_5 groups are hydrogen, organic radicals or organic radicals having chemical constituents substituted thereon and wherein any two or more of said R_1, R_2, R_3, R_4 and R_5 groups may be chemically bonded one to another, and acid salts of said compounds.

4,325,739
MAGNETIC METAL AND ALLOY PIGMENTS

Hans-Peter Biermann, Krefeld; Helmut Steinberger, Leverkusen; Artur Botta, Krefeld; Rolf Naumann, Krefeld; Lutz Leitner, Krefeld, and Heinrich Heine, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,682

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945687; Jul. 22, 1980, 3027757

Int. Cl.³ C04B *31/28;* B22F *1/02*

U.S. Cl. 106—290 **9 Claims**

1. A pigment of a magnetic metal or alloy thereof carrying, in about 0.2 to 30% of the weight of the metal or alloy, a coating of at least one member selected from the group consisting of an ortho-silicic acid ester, a hydrolyzate thereof and a condensation product thereof.

3. A pigment according to claim **1**, wherein the ortho-silicic acid ester is of the formula

$$(RO)_nSi(OR')_{4-n}$$

in which

R is an alkyl, cycloalkyl or alkenyl radical having from 1 to 20 C-atoms, possibly branched and/or interrupted by at least one oxygen bridge, an aryl radical, or an aralkyl radical,

R' is an alkyl radical having from 1 to 4 C-atoms, and

n is from 0 to 4.

4. A pigment according to claim **1**, wherein the coating additionally contains a corrosion inhibitor in about 0.01 to 5% by weight of the metal or alloy.

4,325,740
POLYMERIC AMINE METALLATE COATINGS

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

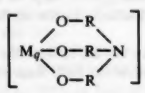
Continuation-in-part of Ser. No. 27,026, Apr. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 188,989, Sep. 22, 1980, abandoned. This application Dec. 29, 1980, Ser. No. 218,681

Claims priority, application Mexico, Apr. 1, 1980, 181806

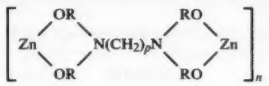
Int. Cl.³ C04B *31/02*

U.S. Cl. 106—300 **14 Claims**

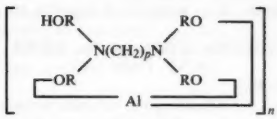
1. A solid particulate rutile TiO_2 pigment substrate having a coating consisting essentially of (a) a polymeric amine metallate of the general formula



where R is an alkylene radical of from 2–6 carbon atoms, n is an integer of 4–6, q is 1 when M is aluminum and q is 3/2 when M is zinc and M is aluminum or zinc or (b) a polymeric amine metallate of the general formula



or (c)



where p is an integer from 2–5, n is an integer of 4–6, R is as defined above and the amount of aluminum or zinc expressed as an oxide is 0.17–2% by weight based on the weight of substrate.

4,325,741
FIBROIN-COATED PIGMENT AND PROCESSES FOR PRODUCING SAME

Kiyoshi Otoi, Nagano, and Toshihiro Nasuno, Odawara, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 187,899

Claims priority, application Japan, Sep. 20, 1979, 54-121121

Int. Cl.³ C04B *31/40;* C08J *7/18;* C09C *3/00*

U.S. Cl. 106—308 N **21 Claims**

1. A fibroin-coated pigment comprising a carrier pigment in the form of finely divided particles whose surfaces are substantially coated with a film of regenerated fibroin, the regenerated fibroin having a degree of crystallinity of at least 10%, the amount of the regenerated fibroin being in the range of 2 to 100% by weight based on the weight of the carrier pigment, at least 50% by weight of the regenerated fibroin being constituted of hot-water-insoluble fibroin having the β-configuration.

9. A process for producing a fibroin-coated pigment which comprises the steps of dissolving a degummed silk material in at least one solvent selected from the group consisting of an aqueous cupri-ethylenediamine solution, an aqueous ammoniacal solution of cupric hydroxide, an aqueous alkaline solution of cupric hydroxide and glycerol, an aqueous lithium bromide solution and an aqueous solution of the chloride or nitrate of calcium, magnesium or zinc, and an dialyzing the resulting fibroin solution; dispersing a carrier pigment in the resulting aqueous fibroin solution having a fibroin concentration of from 3 to 20% by weight; subjecting the pigment-loaded aqueous fibroin solution to at least one treatment for coagulating and precipitating the fibroin, the treatment being selected from the group consisting of the addition of a coagulating said, aeration, exposure to ultrasonic waves, and agitation at high shear rate; dehydrating and drying the resulting coagulum; and then pulverizing the dried product.

4,325,742
RARE EARTH CATION EXCHANGED ADSORBENTS FOR CARBOHYDRATE SEPARATIONS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 5, 1981, Ser. No. 231,705

Int. Cl.³ C13D *3/12, 3/14*

U.S. Cl. 127—46.2 **17 Claims**

1. A process for separating a carbohydrate from a feed stream comprising a mixture of carbohydrates which process comprises contacting at adsorption conditions said feed stream with an adsorbent comprising a crystalline aluminosilicate or cation exchange resin, the exchangeable cationic sites of said

adsorbent being exchanged with cations of a rare earth metal, thereby selectively adsorbing said carbohydrate from said feed stream, and then removing the feed stream from contact with said adsorbent.

4,325,743

PROCESS FOR THE ENHANCEMENT OF CARAMEL COLORANT

Merrick S. Tibbetts, South Salem, N.Y., and Gareth J. Templeman, Lewisville, Tex., assignors to PepsiCo, Inc., Purchase, N.Y.

Filed May 1, 1981, Ser. No. 259,701
Int. Cl.³ C13D *3/12*
U.S. Cl. 127—46.2 **5 Claims**

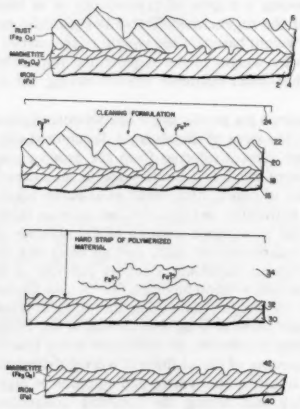
1. A process for enhancing the colorant properties of caramel colorant comprising passing an aqueous liquid containing caramel colorant through a size exclusion chromatographic material while subjecting the liquid to centrifugal force of about 10 G to about 2000 G and then collecting the caramel containing liquid having enhanced colorant properties.

4,325,744

METHOD AND COMPOSITION FOR CLEANING METAL SURFACES WITH A FILM-FORMING COMPOSITION

Ramanathan Panayappan, Potomac, Md., and David L. Venezky, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 25, 1980, Ser. No. 172,348
Int. Cl.³ B08B *7/00*; C11D *3/37, 7/32*; C23G *5/00*
U.S. Cl. 134—4 **7 Claims**



1. A method of cleaning a metal surface of deposit containing a metal oxide comprising:

forming an aqueous solution of a polyvinylpyrrolidone with an average molecular weight from about 10,000 to about 500,000, said solution having a polymer concentration at least sufficient to form a polymeric layer capable of removing said deposit and a chelating agent in an amount from about 1 to about 10 weight percent of said solution;

applying said solution onto said metal surface to be cleaned, whereby said solution forms a thick film layer which encapsulates said deposit on the metal surface;

allowing said layer to harden while cleaning occurs; and

removing the said layer along with corrosion products said deposit from the said metal surface.

4,325,745

PAINT REPELLENT COMPOSITION AND METHOD

Tome Milevski, 267 E. Burlington St., Riverside, Ill. 60546

Filed Feb. 5, 1981, Ser. No. 231,827
Int. Cl.³ C03C *23/00*; C09D *5/20*
U.S. Cl. 134—4 **4 Claims**

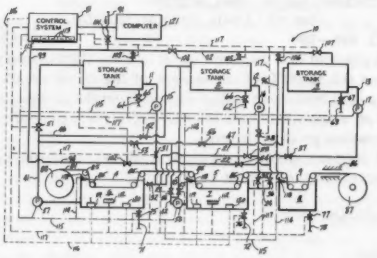
1. A paint repellent composition which comprises, from about 15 to 25 parts by weight of a liquid hydrocarbon oil, from about 1 to 5 parts by weight of sucrose, from about 5 to 15 parts by weight silicon dioxide, from about 2 to 8 parts by weight acetic acid, from about 1 to 5 parts by weight sodium chloride, and from about 50 to 70 parts by weight aluminum silicate.

4,325,746

SYSTEM FOR CLEANING METAL STRIP

James M. Popplewell, Guilford, and Martin H. Dempsey, Stratford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 80,400, Oct. 1, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,813
Int. Cl.³ B08B *7/04*; C23G *3/02*
U.S. Cl. 134—10 **33 Claims**



18. A process for cleaning a continuous strip of metal or metal alloy comprising the steps of:

providing a system having a plurality of off-line storage tanks and a cleaning line comprising at least two on-line cleaning tanks;

maintaining a plurality of cleaning solutions in said storage tanks;

providing said cleaning line with a first mode for cleaning said strip comprising a first set of cleaning solutions;

providing said cleaning line with a second mode for cleaning said strip comprising a second set of cleaning solutions different from said first set of cleaning solutions;

selecting at least one of said first and second sets of cleaning solutions in accordance with the type or composition of metal or metal alloy comprising said strip;

generating a signal indicative of said selected set;

automatically conditioning said system in response to said signal for delivering said selected set of cleaning solutions to said cleaning tanks from said storage tanks; and

passing said strip through said cleaning tanks.

4,325,747

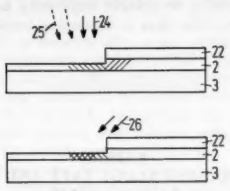
METHOD OF MAKING A MESFET HAVING SAME TYPE CONDUCTIVITY FOR SOURCE, DRAIN, AND GATE REGIONS

Dietrich Ristow, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,895
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821975
Int. Cl.³ H01L *21/20, 21/306*
U.S. Cl. 148—1.5 **7 Claims**

1. A method for manufacturing a metal-semiconductor field

effect transistor have gate, drain, and source zones, comprising the steps of: providing a semiconductor layer; applying a mask covering a portion of a surface of the semiconductor layer where the drain zone is to be formed; removing a portion of the semiconductor layer adjacent the covered surface portion; implantation doping the semiconductor layer at said surface from a first direction where the mask covers the drain zone but



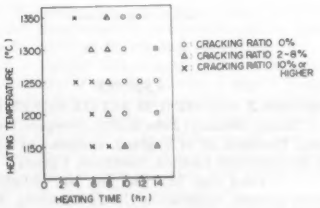
not the source and gate zones so as to permit a doping of the source and gate zones; and from a second direction at which a shadow is provided by the mask edge so as to dope the source zone but not the gate and drain zones; and providing the source zone with a greater doping than the gate zone and the gate zone with a greater doping than the drain zone by said implantation doping in the first and second directions utilizing the mask and the shadowing effects of the mask edge.

4,325,748

METHOD FOR PRODUCING STEEL PLATE HAVING EXCELLENT RESISTANCE TO HYDROGEN INDUCED CRACKING

Hajime Nashiwa, Sakai; Toshihiko Kawai, Wakayama; Muneyoshi Takeyama, Wakayama; Youzi Yamaguchi, Wakayama; Tsuneaki Kobayashi, and Tsutomu Nagahata, both of Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 27, 1980, Ser. No. 134,579
Claims priority, application Japan, Mar. 28, 1979, 54-37593
Int. Cl.³ C21D *8/00*
U.S. Cl. 148—2 **5 Claims**



1. A method for producing a steel plate having resistance to hydrogen induced cracking, comprising the steps of:

providing a continuously cast steel slab containing 0.01 to 0.30% by weight of C, 0.05 to 0.60% by weight of Si, 0.40 to 2.50% by weight of Mn, 0.005 to 1.00% by weight of Sol Al, up to 0.003% by weight of S, and Ca in an amount such that the weight ratio of Ca/S is 2 to 10, the remainder being substantially iron;

subjecting said slab to hot primary reduction rolling at a temperature of from 1100° to 1300° C. to reduce the thickness of said slab to 50% or less of its original thickness;

heating the rolled slab at a temperature of 1200° C. or higher for 10 hours or longer; and

hot rolling the thus heated slab.

4,325,749

METHOD OF TREATING WELDING ROD FOR CORROSION RESISTANCE

Loren E. Barlet, 58100 Romeo Plank Rd., Mt. Clemens, Mich. 48044

Filed Nov. 4, 1980, Ser. No. 203,960
Int. Cl.³ C23F *7/04*; B23K *35/365*
U.S. Cl. 148—6.14 R **2 Claims**

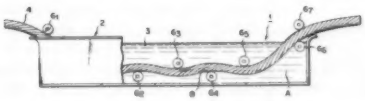
1. A method of manufacturing ferrous base welding rod or wire comprising the steps of drawing steel alloy stock to a finished diameter and subsequently treating said welding rod to generate a black oxide coating, said treatment including the step of immersing said welding rod in an aqueous alkali-nitrate solution, to produce a thickness of black oxide coating on the order of 0.0001 inches.

4,325,750

METHOD FOR MANUFACTURING A STRANDED CONDUCTOR FOR AN ELECTRIC POWER CABLE

Michio Takaoka, Chiba; Tsuneaki Mohtai, Yachiyo; Syotaroh Yoshida, and Kazuo Watanabe, both of Tokyo, all of Japan, assignors to The Fujikura Cable Works, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 134,996, Mar. 28, 1980, abandoned, which is a division of Ser. No. 41,334, May 22, 1979, abandoned. This application May 7, 1981, Ser. No. 261,473
Claims priority, application Japan, Nov. 9, 1978, 53-138066
Int. Cl.³ C23F *7/02*
U.S. Cl. 148—6.14 R **2 Claims**



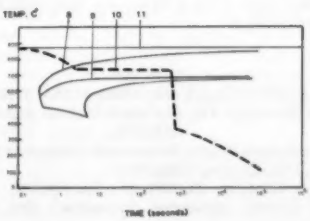
1. A method for manufacturing a stranded conductor for an electric power cable, comprising the step of: advancing a stranded conductor constituted by a plurality of stranded uninsulated conductive strands through a bath of oxidizing liquid in a predetermined path, while said conductor is curved in a wavy fashion at an angle of 3° to 10° to said path, thereby coating and forming an oxide film on each of said strands while maintaining the elasticity of the conductor.

4,325,751

METHOD FOR PRODUCING A STEEL STRIP COMPOSED OF A DUAL-PHASE STEEL

Erik A. A. Josefsson, Borlänge, Sweden, assignor to SSAB Svenskt Stal Aktiebolag, Stockholm, Sweden

Filed May 12, 1980, Ser. No. 148,942
Claims priority, application Sweden, May 9, 1979, 7904053
Int. Cl.³ C21D *8/02*
U.S. Cl. 148—12 F **6 Claims**



1. A method of forming a steel strip which displays high strength and formability properties, the steel in said steel strip

comprising a dual-phase steel containing mostly fine-grained ferrite with grains of martensite dispersed therein, which method comprises

(a) processing an initial steel which comprises 0.05–0.20% carbon, 0.50–2.0% silicon, 0.50–1.5% manganese, 0–1.5% chromium, 0–0.15% vanadium, 0–0.15% molybdenum, 0–0.04% titanium, 0–0.02% niobium, balance of iron and normal impurities through a hot-strip mill so as to form a hot steel strip,

(b) cooling the hot steel strip of step (a) to a temperature of between 800° and 650° C.,

(c) coiling the steel strip of step (b),

(d) maintaining the temperature of the coiled steel strip of step (c) within the range of 800° and 650° C. for a time period of more than one minute,

(e) uncoiling the steel strip of step (d), and

(f) cooling the steel strip from step (e) to a temperature of below 450° C. at a rate exceeding 10° C./second.

4,325,752

METHOD FOR MAKING SHADOW MASKS

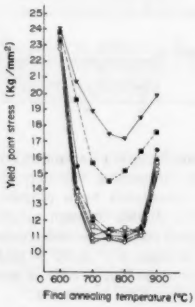
Toyoharu Suda, Kawasaki; Katsuhiko Tayama, Yokohama; Kenji Araki, Yokohama; Masayuki Kurata, Yokohama, and Hideo Yamana, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Nippon Mining Co., Ltd., both of Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,924

Claims priority, application Japan, Aug. 22, 1979, 54-107024

Int. Cl.³ C21G *9/00*

U.S. Cl. 148—12.1 **5 Claims**



1. A method for making shadow masks comprising, making an Al killed cold rolled steel sheet which consists essentially of C: less than 0.01%, Mn: 0.10–1.00%, S: less than 0.025%, Sol.Al: 0.010–0.12%, N: less than 100 ppm, the remainder being Fe and unavoidable impurities, where N and Sol. Al have the relationship of $Sol.Al/N \times 14/27 \geqq 1.5$ and most of the N is fixed as AlN,

re-rolling the said sheet to a thickness below 0.2 mm, photo-etching the steel to bore holes through it, and final annealing the sheet in a decarbonizing atmosphere at temperatures in the range of 650°–850° C. for 1–30 minutes, then leveling the steel and press forming it.

4,325,753

PROCESS FOR DEGREASE ANNEALING THIN STRIP AND FOIL MADE OF ALUMINUM AND ALUMINUM ALLOYS

Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,174

Claims priority, application Switzerland, Oct. 18, 1979, 9355/79

Int. Cl.³ C22F *1/02*

U.S. Cl. 148—20.3 **5 Claims**

1. Process for degrease annealing of thin strip or foil made of aluminum or aluminum alloys in an annealing furnace which comprises:

providing said aluminum strip or foil containing lubricating oil residue thereon, and degrease annealing said aluminum strip or foil in an annealing furnace containing ozone at an elevated temperature, thereby obtaining reduced sticking tendency and accelerated removal of lubricating oil residue with ability to achieve degreasing in approximately 30% shorter time than in ozone-free atmosphere.

4,325,754

FLEXIBLE BRAZING ALLOY TAPE AND METHOD OF MAKING SAME

Howard Mizuhara, San Mateo, and Ronald W. Cox, Menlo Park, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,239

Int. Cl.³ B23K *35/22;* **C23C** *1/12*

U.S. Cl. 148—22 **3 Claims**

1. A brazing alloy composition comprising a binder consisting of a low viscosity polyacrylic acid polymer and glycerol and the balance a nickel-base alloy powder.

2. A flexible brazing alloy composition comprising a binder consisting essentially of 0.87 to 1.15% by weight of a low viscosity polyacrylic acid polymer and 0.5% to 0.6% by weight glycerol, and the balance substantially all a nickel-base alloy powder.

3. The method of preparing a self-supporting flexible tape for use in brazing, consisting of the steps of

preparing a mixture consisting of an aqueous solution of low viscosity polyacrylic acid polymer, glycerol and a metal brazing powder selected from the group consisting of nickel-base alloys, copper-base alloys, and copper,

casting said mixture into a tape,

drying the tape so that the tape will consist of from about 0.87 to 1.15% by weight of polyacrylic acid polymer, 0.5% to 0.6% glycerol and the balance said brazing powder.

4,325,755

FORMABLE ALUMINUM ALLOY SHEET PRODUCT

John C. Blade, Banbury; John Ridley, Newport, and Geoffrey C. Wood, Bloxham, all of England, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Aug. 25, 1980, Ser. No. 180,859

Claims priority, application United Kingdom, Aug. 30, 1979, 30003/79

Int. Cl.³ C22C *21/02*

U.S. Cl. 148—32 **12 Claims**

1. A cold-rolled aluminium alloy sheet product formed of an alloy consisting essentially of

Fe 0.6–1.0%

Si 0.5–0.9%

Cu 0.3–0.5%

Mn up to 0.3%

Ti+B in conventional grain refining amount (Ti+B 0.006–0.06%)

Others up to 0.15% total and 0.05% each

Al balance,

said sheet product being characterized by a combination of a thickness in the range of 15 microns to 3 mms, a grain size of less than 100 microns and a U.T.S. of at least 150 MPa.

4,325,756

FATIGUE RESISTANT NICKEL SUPERALLOY

Edgar E. Brown, South Windsor, and Duane L. Ruckle, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 970,779, Dec. 18, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,655

Int. Cl.[3] C22C *19/03*

U.S. Cl. 148—32.5 6 Claims

1. As an article of manufacture, a gas turbine disc having improved fatigue resistance in the 550°–750° C. range, said disc being formed of a gamma-gamma prime fatigue resistant nickel base alloy consisting essentially by weight percent of 0.25–9 Al, 1–4 Ti, 2–6 Cb, 0.01–0.1 C, and at least one material comprising 5–13 weight percent, said material selected from the group consisting by weight percent of 0–6 Co, 0–6 Mo, 2–7.5 Cr, 0–2.5 Hf and mixtures thereof balance nickel, the article further having a composition and heat treatment which provides between 10 and 45 volume percent gamma prime.

4,325,757

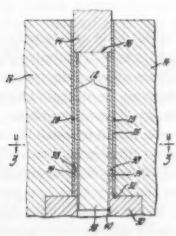
METHOD OF FORMING THIN CURVED RARE EARTH-TRANSITION METAL MAGNETS FROM LIGHTLY COMPACTED POWDER PREFORMS

William F. Jandeska, Jr., Rochester, and Charles F. Netherton, Marine City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1979, Ser. No. 72,081

Int. Cl.[3] H01F *1/02*

U.S. Cl. 148—103 3 Claims



1. A method of forming rare earth-transition metal powder into a thin, curved, permanent magnet metallurgically bonded to a ferromagnetic backing, the method comprising:

inserting into a tubular ferromagnetic sheath member a cylindrical composite mandrel having a highly magnetically permeable ferromagnetic core that is slidably retained within a non-magnetic sleeve sized to closely fit against the inner surface of the tubular sheath, said mandrel having at least one axial slot in its peripheral surface which in combination with the inner wall of the tubular sheath forms a cavity in the magnet shape;

filling said cavity with rare earth-transition metal powder in which the powder particles have single magnetic domains;

applying a magnetic field to align the easy axis of the powder particles radially with respect to the cavity curvature, the magnetically permeable mandrel core providing a low reluctance path for the field flux and a high flux density in the powder cavity;

pressing the powder in the axial direction to a density of at least about 50% of the rare earth-transition metal density to fix the powder particles in the magnetically aligned state,

removing the magnetic field, the particles thereafter having sufficient residual magnetism to adhere to adjacent ferromagnetic material;

withdrawing the ferromagnetic core portion from the mandrel, and thereafter withdrawing the non-magnetic sleeve portion without disturbing the particle alignment such that said the rare earth-transition metal powder is retained against the sheath in a cohesive mass in the shape of the magnet by residual magnetic attraction; and

heating the powder mass to promote densification to at least about 90% of the density of the rare earth-transition metal.

4,325,758

HEAT TREATMENT FOR HIGH CHROMIUM HIGH CARBON STAINLESS STEEL

Edward J. Milligan, Marion County, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,237

Int. Cl.[3] C21D *1/32*

U.S. Cl. 148—135 13 Claims

1. A process for softening hard, as cast, high chromium, (>12% Cr), high carbon (>1% C) steel, which comprises:

(a) pre-heating the steel to a temperature somewhat below its critical point for a suitable period of time;

(b) raising the temperature of the steel for a given period of time to a temperature in excess of that necessary to dissolve chromium carbide into the steel grain matrix without substantially increasing grain size of the matrix, thereby homogenizing the steel;

(c) isothermally annealing the homogenized steel at a temperature and for a time so as to form a substantially spheroidized structure; and

(d) cooling the annealed steel.

9. A process for softening as cast steel having a Rockwell hardness of C60 to C65 and a composition of 2% carbon, 16% chromium, 1.75% molybdenum, 1% silicon and the balance being substantially iron, comprising the steps of:

(a) pre-heating the steel at a temperature of from 1450° F. to 1500° F. for a least 1 hour in a partial vacuum;

(b) homogenizing the steel at a temperature of about 1950° F. for a least 3 hours in a vacuum of from about 500 to 1000 microns;

(c) isothermally annealing the homogenized steel at a temperature of from 1300° F. to 1350° F. for a time of at least 4 hours in a vacuum of from 500 to 1000 microns; and

(d) cooling the annealed steel by means of a gas quench.

4,325,759

PREPARATION OF TNT-THERMOPLASTIC POLYMER GRANULES READILY SOLUBLE IN A TNT MELT

H. William Voigt, Jr., Wharton, and Bernard R. Banker, Mine Hill, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1979, Ser. No. 104,499

Int. Cl.[3] C06B *45/10*

U.S. Cl. 149—19.92 20 Claims

1. A process for preparing a composition essentially of 2,4,6-trinitrotoluene (TNT) and a thermoplastic organic polymer containing up to about 35% of said polymer, in the form of granules rapidly soluble in molten TNT, which comprises preparing a solution of the TNT and the polymer in a water-soluble organic solvent consisting essentially of at least one saturated aliphatic ketone containing 3 to 5 carbon atoms, and diluting the solution with water in amount sufficient to precipitate the TNT-polymer composition in granular form.

13. A process for preparing a solution of a thermoplastic polymer in TNT, which comprises:

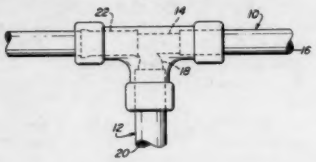
dissolving a mixture of the thermoplastic polymer and TNT containing up to about 35% of said polymer in a water-soluble organic solvent consisting essentially of at least one saturated aliphatic ketone containing 3 to 5 carbon atoms,

diluting the solution with water in amount sufficient to precipitate the TNT-polymer mixture in granular form, and dissolving the TNT-polymer granules in molten TNT.

4,325,760
METHOD OF MAKING A CABLE SPLICE

Victor J. Julian, Westchester, and Kenneth A. Julian, Oak Brook, both of Ill., assignors to Julian Electric Inc., Westmont, Ill.

Filed Apr. 21, 1980, Ser. No. 142,094
Int. Cl.³ B21F *15/02*
U.S. Cl. 156—49 **2 Claims**



1. A method of splicing a first metallic conductor to a second metallic conductor comprising the steps of

providing a first conductor having an exposed stranded wire conductive portion,

providing a second conductor having an exposed stranded wire conductive portion,

inserting said conductive portions into a metallic tubular member,

then forging said tubular member onto said conductive portions to mechanically and electrically interconnect said conductive portions,

then bending one of said conductors at a predetermined angle relative to the other of said conductors at a location in proximity to said other of said conductors and said tubular member after said step of forging,

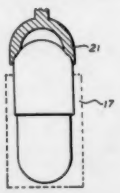
then soldering said conductive portions together at the location where said one of said conductors was bent, and

then molding a plastic cover over said tubular member and the soldered portions of said conductive portions of said conductors.

4,325,761
TWO-PIECE HARDSHELL, SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE

Joseph A. Pace, Bethlehem, Pa., assignor to R. P. Scherer Corporation, Troy, Mich.

Division of Ser. No. 89,772, Oct. 31, 1979, Pat. No. 4,281,763. This application Aug. 14, 1980, Ser. No. 178,381
Int. Cl.³ B29C *27/08*; B65D *83/04*
U.S. Cl. 156—69 **3 Claims**



1. A method of forming a two-piece hardshell, soluble and digestible gelatin capsule, said method comprising the steps of:

forming a U-shaped body member having a closed lower end and an open free end terminating in an upper edge;

forming a cap member for receiving the open free end of said U-shaped body member, said cap member including a continuous interior rim therein;

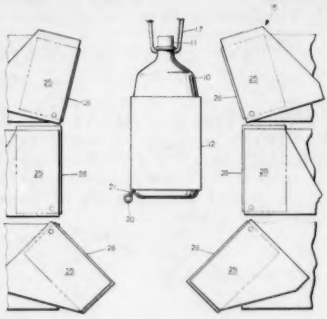
abuttingly engaging said upper edge of said U-shaped body member against said interior rim formed in said cap member; and,

applying ultrasonic energy to the region where said upper edge of said U-shaped body member abuts said interior rim so as to form a substantially continuous interior ultrasonic weld between said upper edge and said interior rim, said interior ultrasonic weld extending continuously 360° around said upper edge of said U-shaped body member.

4,325,762
METHOD AND APPARATUS FOR APPLYING PLASTIC SLEEVES TO CONTAINERS

Robert J. Burmeister, Toledo; Russell W. Heckman, Perrysburg, and Robert C. Miller, Whitehouse, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 16, 1980, Ser. No. 159,721
Int. Cl.³ B29C *27/20*; B32B *31/26*
U.S. Cl. 156—86 **18 Claims**



1. In the method of labeling containers such as glass or plastic bottles, and the like, which includes the steps of providing a tubular sleeve of heat-shrinkable, thermoplastic material, retaining the said container in upright, vertical relation by grasping the upper portion of said container, transporting the said container and sleeve simultaneously in vertically-aligned relation, telescoping the said sleeve upwardly over the body portion of said container during their simultaneous transport in vertical alignment, the improvement comprising the steps of rotating the container about its axis whie bearing said sleeve, retaining the lower edge of said sleeve to maintain the sleeve in alignment with respect to the body portion of said container, and transporting said rotating container and sleeve along a path between at least two sources of heat while maintaining said sleeve a greater distance from the at least one source of heat on one side of said path than from the at least one source of heat on the opposite side of said path to thermally contract the sleeve into snug engagement with said container.

4,325,763
METHOD OF MANUFACTURING CERAMIC CAPACITORS

Kazuaki Utsumi; Masatomo Yonezawa, and Tomeji Ohno, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 32,403, Apr. 23, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,700
Claims priority, application Japan, Apr. 25, 1978, 53/49490; Apr. 25, 1978, 53/49491
Int. Cl.³ C03B *29/00*; C04B *33/34, 43/00*; H01G *4/10*
U.S. Cl. 156—89 **5 Claims**

1. A method of manufacturing a ceramic capacitor comprising the steps of coating an electrode paste on only an outer layer of the opposite surfaces of a green ceramic body, said electrode paste containing silver as a major ingredient, and a binder having 1 to 50% by weight of an inorganic binder having the same composition as said green ceramic body and sintering said green ceramic body concurrently with the baking of said electrode paste, wherein said green ceramic body is

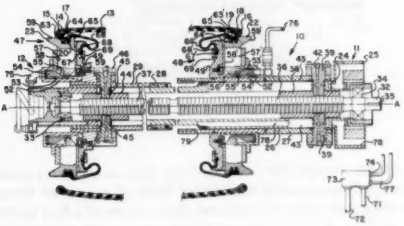
prepared by dispersing a powder consisting essentially of a mixture of $Pb(Fe_{\frac{2}{3}}W_{\frac{1}{3}})O_3$ and $Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, or a mixture of $Pb(Fe_{\frac{2}{3}}W_{\frac{1}{3}})O_3$ and $Pb(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$ in a solvent together with an organic binder to form a slurry and then forming the slurry into said green ceramic body.

4,325,764

DRUM AND METHOD OF SHAPING A RADIAL TIRE

Paul E. Appleby, Cuyahoga Falls; Henry D. Broyles, Akron; John E. Hill, Akron, and Arland A. Peck, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 19, 1980, Ser. No. 161,055
Int. Cl.³ B29H *17/26*
U.S. Cl. 156—123 R **11 Claims**



9. A method of building a radial tire comprising:

A. fabricating at a first location a first stage tire carcass including at least one radial ply in generally cylindrical form extending between a pair of annular inextensible beads located at spaced-apart bead portions;

B. placing said carcass about tire shaping means at a second location with said bead portions being supported on a pair of supporting surfaces having bead seats;

C. positioning said bead seats coaxially and at a spaced-apart distance less by a predetermined amount than the distance between said spaced-apart bead portions of said first stage tire carcass;

D. expanding said supporting surfaces radially by fluid pressure to engage circumferentially said bead portions;

E. moving said supporting surfaces axially apart by a distance sufficient to register said bead portions on said bead seats and exert an axial tension on said radial ply;

F. expanding said bead seats radially to a predetermined diameter by increasing said fluid pressure to secure said bead portions on said bead seats in the registered positions;

G. moving said bead seats and said bead portions together while radially expanding said radial ply therebetween for the application of a belt ply and tread; and

H. retracting said bead seats and removing said fabricated and shaped tire from said tire shaping means.

4,325,765

HIGH SPEED SPINNING OF LARGE DPF POLYESTER YARN

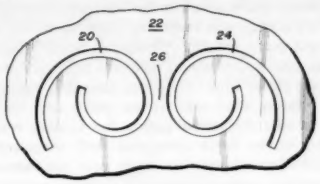
Jing-peir Yu, and James E. Bromely, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 868,093, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 778,913, Mar. 18, 1977, Pat. No. 4,176,150. This application Jun. 20, 1980, Ser. No. 161,716
Int. Cl.³ D04H *3/16*
U.S. Cl. 156—167 **8 Claims**

1. A process for melt spinning a non-round polyester filament having a denier of at least 10 comprising

a. extruding a first molten polyester stream through a first non-round spinneret orifice;

b. extruding a second molten polyester stream through a second orifice, said second orifice being located sufficiently close to said first orifice that said first and second molten polyester streams unite to form a composite stream;



c. quenching said composite stream to form a filament having a denier of at least 10; and

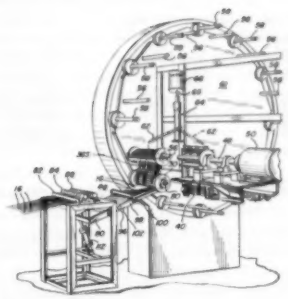
d. withdrawing said filament from said composite stream at a spinning speed of at least 4000 meters per minute.

4,325,766

METHOD FOR THE FORMATION OF CORROSION-RESISTANT BODIES AND APPARATUS FOR FORMING THE SAME

Vesta F. Michael, Big Spring, Tex., assignor to Fiber Glass Systems, Inc., Big Spring, Tex.

Filed Apr. 2, 1980, Ser. No. 136,628
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—171 **10 Claims**



1. In a method for forming a filament-reinforced, corrosion-resistant body of predetermined length about a rotatable form, the steps comprising winding a web of substantially parallel filaments having a width substantially equal to said predetermined length about a first rotatable form at a first station; said filaments extending substantially axially of said form; saturating said web with a hardenable resin at said first station; winding the saturated web from said first rotatable form about a second rotatable form for said body at a second body-forming station; simultaneously applying reinforcing filaments spirally about said second form with said saturated web whereby longitudinal and transverse spiral reinforcing filaments are applied to said second form simultaneously moving filaments forming said spirals over a guide surface prior to engaging said second rotatable form; said guide surface having hardenable resin thereon whereby said filaments forming said spirals are saturated with hardenable resin prior to engaging said rotatable form.

4. In combination a plurality of rotating shafts for mounting forms for forming filament-reinforced resin bodies; a plurality of means for mounting saturated reinforcing filaments for use in forming said reinforced resin bodies; said reinforcing filaments being arranged substantially axially of the mounting

means on which disposed; each of the mounting means comprising a resin coating assembly for coating filaments mounted thereon; each mounting means being disposed adjacent one of said rotating shafts whereby said rotating shafts and mounting means are arranged in associated pairs; means for moving said associated pairs seriatim through a body-formation station whereat saturated filaments mounted on one of said mounting means are pulled from one of said mounting means by its associated rotating shaft and wound about said rotatable shaft; means at said formation station for feeding resin-saturated filaments to the latter associated shaft transversely to said saturated filaments received from said one mounting means simultaneously with said saturated filaments received from said mounting means until a filament-reinforced resin body of desired size has been formed.

4,325,767

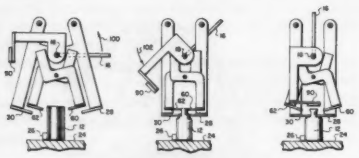
METHOD FOR HEAT SEALING

Daniel G. Graves; Vernard L. Graves, both of Duncanville, and Ernest W. Knudsen, Jr., Arlington, all of Tex., assignors to Universal Precision Machining Co., Dallas, Tex.

Division of Ser. No. 72,648, Sep. 5, 1979, Pat. No. 4,265,696. This application Mar. 6, 1981, Ser. No. 241,414

Int. Cl.[3] **B32B** *31/02, 31/20, 31/26*

U.S. Cl. 156—196 **6 Claims**



1. A method for manually sealing heat sealable material by gripping, heating and sealing said material in a single actuation bi-directional drive train and in a manner requiring the use of only one hand of an operator, said method comprising:

provide a manually operable drive shaft rotatably mounted within a support frame for heat sealing material;

provide a heat sealing element for sealing said material;

couple said heat sealing element directly to said drive shaft for rotation therewith;

provide means for positioning said material adjacent said drive train for the sealing thereof, in a seond rotatable position;

provide means for gripping said material relative to a first rotatable position of said drive shaft;

provide means for squeezing said material relative to a third rotatable position of said drive shaft;

dispose said material adjacent said drive train with said drive shaft in an initial rotatable position for receiving material for sealing;

rotate said drive shaft in a first direction to a first position of arcuate displacement and grip said material relative to said drive shaft;

rotate said drive shaft in said first direction to a second position of greater arcuate displacement and wherein said heat sealing element is adjacent said material;

rotate said drive shaft in a second opposite direction to a third position between said first and second positions wherein said heat sealing element is displaced from said material and said heated material is being squeezed; and

rotate said drive shaft in said second direction to its initial rotational position.

4,325,768

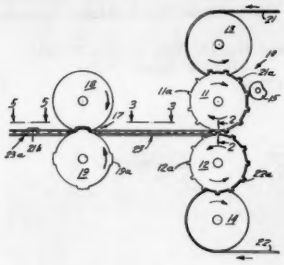
METHOD OF MANUFACTURING FIBROUS SHEET STRUCTURE

Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,653

Int. Cl.[3] **B32B** *31/20*

U.S. Cl. 156—206 **1 Claim**



1. In the manufacture of multi-ply fibrous sheet structure, the method comprising: embossing each of a pair of fibrous webs with a plurality of crest and depressions of a first pattern on a surface of each; disposing said webs with said surfaces facing each other and with the crests on each web positioned between the crests on the other web, and extending beyond the crests on the other web toward the depressions on the other web; portions interconnecting crests and depressions of one web being laterally spaced from portions interconnecting crests and depressions of the other web; adhesively joining at least some of said crests of one web to the depressions of the other web, to join said webs to form a sheet; and embossing said sheet with a plurality of registered crests and registered depressions of a second pattern in each said web fitted compactly within one another throughout the extents of said crests and depressions, so that crests of the second pattern in one of the webs extend beyond and are spaced from the plane of the portion of said one web having said first pattern of crests and depressions, the crests and depressions of said first pattern being more closely spaced than the crests and depressions of said second pattern.

4,325,769

METHOD OF MAKING BELLOWS

Richard J. Moyse, Sea Coast La., Port Washington, N.Y. 11050, and Clarence L. Moyse, 103-88 Monarch Dr., Largo, Fla. 33540

Filed Jan. 14, 1980, Ser. No. 111,731

Int. Cl.[3] **B23P** *19/04;* **F16J** *3/04;* **G03B** *17/04*

U.S. Cl. 156—217 **8 Claims**

1. In a method for making an axially extendable and contractable camera and enlarger bellows of the type including a plurality of sides defining a hollow body having a generally polygonal cross-section and an open front and rear end, each side of which has a multiplicity of pleats forming successive ridges and valleys with each ridge and valley being formed by relatively rigid planar surfaces separated by a relatively flexible joint, the improvement comprising:

moving a single web of a dielectric sheet material past at least one die having die edges arranged in a predetermined pattern for producing a separable bellows blank having parallel fold lines formed therein for forming said multiplicity of pleats;

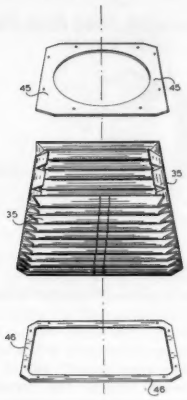
die forming said bellows blank by heating said die with rf heating and effecting contact between said die and a portion of said web;

separating said blank from said web and folding said blank

on a form so that one longitudinal edge thereof overlaps another longitudinal edge thereof so as to produce a seam;

bonding said seam by a resistance heated seaming device to produce a welded seam; and

manually compressing said hollow body along the longitudinal axis thereof and along said fold lines so as to produce



a polygonal bellows body having said ridges and valleys in each of the sides thereof.

8. The method according to claim 1, additionally including the step of inserting a rigid hollow frame into each end of said front and rear open ends of said body and securing the marginal edges of said body and said frames together.

4,325,770

PROCESS FOR PRESSURE-SENSITIVE ADHESIVE COATED PRODUCTS

Ralf Korpman, Bridgewater, N.J., assignor to Permacel, New Brunswick, N.J.

Filed Jun. 27, 1980, Ser. No. 163,606
Int. Cl.³ B41M *3/12*
U.S. Cl. 156—230 **6 Claims**

1. A process for making a pressure-sensitive adhesive coated product comprising:

(a) cooling a thermoplastic elastomer to below minus 20° C. and pulverizing the cool polymer to a size sufficiently fine to pass through a 60 mesh screen to obtain an elastomer powder, said elastomer being an A-B-A block copolymer having a softening temperature maximum of no greater than about 233° C.,

(b) pulverizing a tackifying resin of softening point in the range of about 85° C. to about 150° C. to a size sufficiently fine to pass through a 60 mesh screen to obtain a tackifier powder,

(c) dry blending at ambient temperature or below, said tackifier powder and elastomer powder in a weight ratio of about 50 to about 125 parts of tackifier powder to 100 parts of elastomer powder to obtain a blend of powders,

(d) dry coating said powder blend onto the surface of a substrate,

(e) heating the powder coated substrate to a temperature of at least about 177° C. until the powder particles melt into union with each other to form a homogeneous molten coating, and

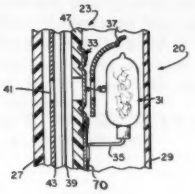
(f) allowing to cool to ambient temperature.

4,325,771

METHOD OF MAKING A DIE-STAMPED CIRCUIT BOARD ASSEMBLY FOR PHOTOFLASH DEVICES

Boyd G. Brower, Williamsport; David R. Broadt, Lewisburg, and John W. Shaffer, Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 19, 1980, Ser. No. 131,711
Int. Cl.³ B32B *31/18*; F21K *5/02*; H05K *3/04*
U.S. Cl. 156—261 **10 Claims**



1. A method of making a circuit board assembly for use in a photoflash device wherein said assembly includes a dielectric substrate, at least one switching element, and at least one electrical conductive member, said method comprising:

positioning said switching element at a predetermined location on a first surface of said substrate;

positioning said dielectric substrate on a base member;

orienting a thin strip of electrically conductive material over said dielectric substrate and said switching element;

engaging said thin strip of conductive material with a metal die member so as to press preselected portions of said conductive material and said switching element into said dielectric substrate such that said preselected portions of said conductive material effect electrical contact with said switching element without severing said element, said preselected portions of said conductive material defining said conductive member; and

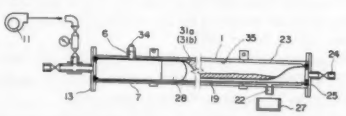
removing the remainder of said electrically conductive material from said substrate member.

4,325,772

METHOD OF INTERNALLY LINING AN INSTALLED PIPE

Tetsui Suetoshi, Kawachinagano; Munetaka Kinugasa, Nishinomiya; Koichi Hosoya, Ashiya, and Mitsuo Yamamoto, Minamikawachigun, all of Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 932,981, Aug. 9, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,919
Claims priority, application Japan, Aug. 18, 1977, 52-99898; Nov. 30, 1977, 52-144775
Int. Cl.³ B29C *27/16*
U.S. Cl. 156—294 **9 Claims**



1. A method of installing an internal-lining in a cleaned and prepared installed pipe surface including an upper portion and a lower portion, comprising the steps of;

(a) placing a flexible liner tube having an outer and an interior surface in said pipe along its lower portion with said liner tube extending the length of said pipe,

(b) introducing a selected quantity of liquid adhesive agent into one end portion of said pipe between a portion of said upper portion of the inner surface of said pipe and a por-

tion of the upper portion of the outer surface of said liner tube, in a sufficient amount to secure the entire length of said flexible liner to said inner surface of said liner pipe,

(c) passing an object having a cross-sectional diameter substantially the same as that of said inner surface of said pipe through the interior of said liner tube from said one end portion in a direction to thereby distribute said introduced liquid adhesive agent evenly and positively in the peripheral and longitudinal directions along said inner surface of said pipe and along the outer surface of said flexible liner as said object passes through said liner tube thereby causing said liner tube to expand into overlying engagement with the inner surface of said pipe and to adhere thereto.

4,325,773

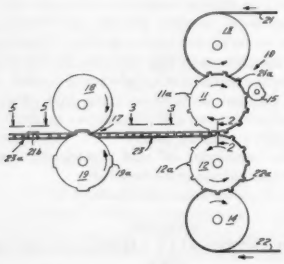
APPARATUS FOR MANUFACTURING FIBROUS SHEET STRUCTURE

Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,652

Int. Cl.[3] **B31F** *1/10*

U.S. Cl. 156—471 **1 Claim**



1. An apparatus for manufacturing embossed sheet structure of fibrous material, comprising:

first embossing means at a first station operative to emboss each of a pair of webs of fibrous material with a plurality of relatively closely spaced crests and depressions of the first pattern;

means operative to position the crests on each web between the crests on the other web so that the crests on each web extend beyond the crests on the other web toward the depressions on the other web and so that portions interconnecting crests and depressions of one web are laterally spaced from portions interconnecting crests and depressions of the other web;

means operative to adhere at least some of the crests of one web to the depressions of the other web, whereby to join said webs together to form a sheet; and

second embossing means at a second station, separate from the first embossing means at the first station, operative to emboss said formed sheet with a plurality of relatively widely-spaced registered crests and registered depressions of a second pattern in said webs fitted compactly within one another throughout the extent of said crests and depressions, wherein said last recited crests of one of said webs extend beyond and are spaced from the plane of the portion of said one web in the sheet structure having said first pattern of crests and depressions.

4,325,774

CORRECTION LABEL APPLYING DEVICE FOR PORTABLE LABEL PRINTING MACHINE

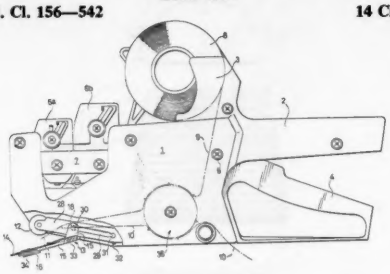
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

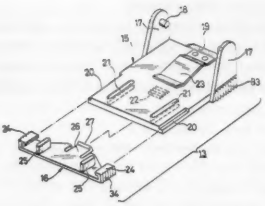
Filed Dec. 11, 1980, Ser. No. 215,319

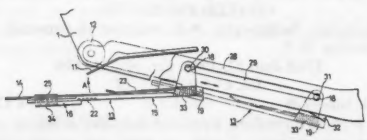
Claims priority, application Japan, Dec. 28, 1979, 54-183457[U]

Int. Cl.[3] **B41F** *13/24;* **B23K** *27/00;* **B31F** *5/04;* **B32B** *31/00;* **B65C** *9/34*

U.S. Cl. 156—542 **14 Claims**







1. A correction label applying device for use in conjunction with a label applicating machine, said device comprising:

price tag holding means for holding a price tag or the like which is to be corrected; and

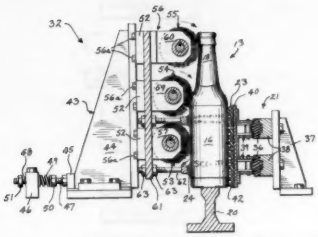
mounting means for mounting said price tag holding means on a label applicating machine for permitting said price tag holding means to be moved between a first and a second position; in said first position, said price tag holding means being adapted to hold a price tag or the like in an applicating position relative to the label applicating machine so that the price tag or the like will receive a label piece fed out by the label applicating machine; in said second position, said price tag holding means being located remote from said applicating position; and when said correction label applying device is mounted on the label applicating machine, said second position being sufficiently remote from said applicating position that said price tag holding means, when in said second position, will not block the application by the label applicating machine of a label to an article other than a price tag or the like held on said price tag holding means.

4,325,775

DELABELER

Horst Moeller, W224 N4915 West View Dr., Sussex, Wis. 53809

Filed Feb. 4, 1980, Ser. No. 118,197
Int. Cl.[3] B32B *31/18*; B67C *1/08*
U.S. Cl. 156—584 18 Claims



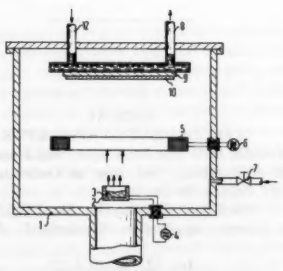
1. A delabeler for removing one or more labels and associated adhesive from a container, comprising means to move a series of the containers through a plurality of processing stations, a strip brush station including a plurality of first brushes each including a plurality of circumferentially spaced, radially extending coarse bristles rotating about an axis spaced adjacent to said moving means and support means connected to said first brushes to position said coarse bristles against each moving container to remove the label, and a scrub brush station including a plurality of second brushes each including a plurality of circumferentially spaced, radially extending fine bristles having a greater flexibility than said coarse bristles and rotating about an axis spaced adjacent to said moving means and support means connected to said second brushes to position said fine bristles against each moving container to remove the adhesive.

4,325,776

METHOD FOR PREPARING COARSE-CRYSTAL OR SINGLE-CRYSTAL METAL FILMS

Günter Menzel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 917,381, Jun. 20, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,890
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727659
Int. Cl.[3] C30B *23/06*
U.S. Cl. 156—610 1 Claim



1. A method for producing coarse-crystal or single-crystal films, comprising:

(a) providing a cooled substrate maintained at a temperature below about −90° C.;

(b) precipitating as a layer on said cooled substrate by vapor deposition or atomizing a metal selected from the group consisting of tantalum, tungsten, copper, cobalt, aluminum, aluminum alloys and titanium-vanadium alloys having a vanadium content of greater than about 70 atom percent, said metal layer being present on said substrate in the amorphous phase;

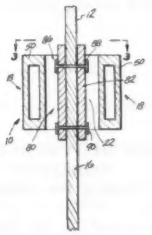
(c) heating said substrate having said metal layer deposited thereon to about room temperature to produce crystals, the diameter of which is larger than about 50 μm.

4,325,777

METHOD AND APPARATUS FOR REFORMING AN IMPROVED STRIP OF MATERIAL FROM A STARTER STRIP OF MATERIAL

John C. Yarwood, Madison; Derek E. Tyler, Cheshire, and Joseph Winter, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 14, 1980, Ser. No. 178,063
Int. Cl.[3] C30B *13/18*
U.S. Cl. 156—620 26 Claims



1. In an apparatus for reforming an improved strip of material from a starting strip of material comprising:

electromagnetic means for maintaining a floating molten zone of said material in said starting strip of said material and for forming said floating molten zone into said improved strip, the improvement wherein said apparatus includes:

susceptor means arranged contiguous to the starting strip and operatively associated with said electromagnetic means for initially radiating and conducting heat to said starting strip whereby said starting strip is sufficiently conductive to be directly heated by said electromagnetic means, and

means for providing relative movement between said susceptor means and said electromagnetic means by positioning said susceptor means in and out of the field of the electromagnetic means.

4,325,778

HIGH CAPACITY ETCHING PROCESS

Martin P. Lepselter, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

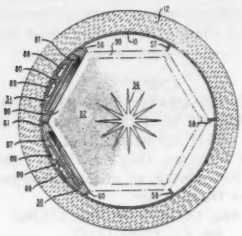
Division of Ser. No. 65,185, Aug. 9, 1979, Pat. No. 4,268,374. This application Jan. 16, 1981, Ser. No. 225,466
Int. Cl.[3] C23C *15/00*
U.S. Cl. 156—643 4 Claims

1. A uniform high-throughput dry etching process for delineating fine-line patterns in multiple workpieces simultaneously by sputter etching or reactive sputter etching in the space between a small-surface-area conductive cylindrical cathode element and a large-surface-area anode element centrally mounted within said cathode element, said process comprising the steps of

mounting the workpieces to be etched on the inner surface of said cathode element in a symmetrical cylindrical array,

establishing a predetermined gaseous atmosphere within said anode-to-cathode space,

and capacitively coupling said cathode element to a source of a-c power and connecting said anode element to a point of reference potential to form a generally symmetrical annular dark space in the immediate vicinity of said work-



pieces and to form a generally symmetrical annular plasma between said dark space and said anode element, thereby to cause uniform etching of said multiple workpieces to occur.

4,325,779

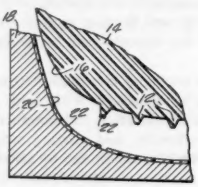
METHOD FOR SHAPING AND FINISHING A WORKPIECE

James J. Rossetti, Palmyra, Wis., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 30,802, Apr. 17, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,826

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—651 **34 Claims**



1. A process for shaping a workpiece and for producing a workpiece surface contour complementary to the surface contour of a model desired to be reproduced, the process comprising the steps of:

(a) providing a non-planar template which is a negative image of the workpiece surface contour to be reproduced;

(b) applying a coating of an etchant resistant masking material to at least a portion of the surface of said workpiece, said masking material being adapted to protect said workpiece surface from the effects of etchant;

(c) pressing said template against said workpiece surface;

(d) withdrawing said template from said workpiece surface to selectively adhere the masking material to the template and correspondingly selectively remove masking material from those portions of said workpiece surface contacted by said non-planar template surface;

(e) applying etchant to said workpiece surface to etch portions of said workpiece surface not covered by said masking material; and

(f) repeating steps (b) through (e) until the surface contour of the workpiece conforms to the nonplanar surface contour of the model.

4,325,780

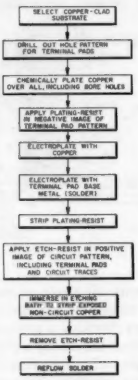
METHOD OF MAKING A PRINTED CIRCUIT BOARD

Robert M. Schulz, Sr., 737 N. Albany Ave., Chicago, Ill. 60612

Filed Sep. 16, 1980, Ser. No. 187,811

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—659.1 **8 Claims**


SELECT COPPER-CLAD SUBSTRATE
DRILL OUT HOLE PATTERN FOR TERMINAL PADS
CHEMICALLY PLATE COPPER OVER ALL, INCLUDING BORE HOLES
APPLY PLATING-RESIST IN NEGATIVE IMAGE OF TERMINAL PAD PATTERN
ELECTROPLATE WITH COPPER
ELECTROPLATE WITH TERMINAL PAD BASE METAL (SOLDER)
STRIP PLATING-RESIST
APPLY ETCH-RESIST IN POSITIVE IMAGE OF CIRCUIT PATTERN, INCLUDING TERMINAL PADS AND CIRCUIT TRACES
IMMERSE IN ETCHING BATH TO STRIP EXPOSED NON-CIRCUIT COPPER
REMOVE ETCH-RESIST
REFLOW SOLDER

1. The method of making a printed circuit board which comprises the steps of: preparing a dielectric substrate having electrically conductive material surfacing at least one side thereof, including perforating the substrate with a pattern of holes corresponding with the terminal pad pattern of the intended electrical circuit; coating portions of the electrically conductive surface of the substrate with plating-resist material in a negative image of the terminal pad pattern; plating terminal pad base metal on the exposed, conductive surfaces of the substrate corresponding with the terminal pad pattern, including the walls of said holes; removing the plating-resist material; applying a layer of etch-resist material over selected portions of the electrically conductive surface of the substrate in a positive image of the circuit pattern, said etch-resist material extending over said terminal pad pattern areas to protect said areas against etching chemicals; immersing the substrate in a chemical etching bath to remove the exposed, non-circuit conductive material; removing the etch-resist material and thermally reflowing the terminal pad base metal after removal of the etch-resist material.

4,325,781

CO-CURRENT EVAPORATOR

Gerhard Proske; Rolf Van der Piepen, and Hans-Joachim Bittner, all of Butzbach, Fed. Rep. of Germany, assignors to Luwa AG, Zürich, Switzerland

Filed Jul. 21, 1980, Ser. No. 170,539

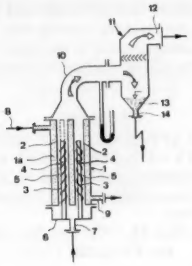
Claims priority, application Switzerland, Jul. 26, 1979, 6912/79

Int. Cl.³ B01D *1/22*

U.S. Cl. 159—13 A **5 Claims**

1. A co-current evaporator having a plurality of evaporator tubes adapted to be heated on the exterior thereof, each evaporator tube having a displacement body disposed interiorly thereof and cooperating therewith to define a flow channel, each displacement body having a smooth wall which forms a gap with the surrounding evaporator tube, said gap having a

width which is constant or variable over the length of the evaporator tube, said displacement bodies having a hollow



interior and means for supplying heat to the hollow interior of the displacement bodies.

4,325,782

APPARATUS FOR REGENERATING ABSORBENT AND METHOD OF OPERATING THE APPARATUS

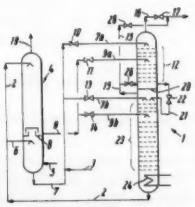
Gerhard Grünewald, Mainz-Gonzenheim, and Manfred Kriebel, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,861

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946433

Int. Cl.[3] **B01D** *1/00*

U.S. Cl. 159—47 R **8 Claims**



1. In an apparatus for regenerating absorbent which is withdrawn from a gas purification zone and is laden with gaseous impurities and is regenerated in a regenerating zone, which contains mass transfer-promoting elements and is included in a regenerating column, in which the absorbent to be regenerated is conducted at temperatures of 30° to 300° C. in a countercurrent to rising stripping vapor, which takes up and carries off the impurities, the improvement wherein said regenerating column comprises an upper regenerating zone, which can be shut down and is provided with at least one shutoff valve-controlled inlet for laden absorbent, and a lower second regenerating zone provided with a second shutoff valve-controlled inlet for the same laden absorbent, the volume ratio of the second regenerating zone to the upper regenerating zone being at least about 1.5 to 1, the upper regeneration zone positioned above the lower regeneration zone in a single structure and means for withdrawing the absorbent from the purification zone to direct the absorbent in parallel paths to the respective regeneration zones.

4,325,783

BLEACHING PROCEDURE USING CHLORINE DIOXIDE AND CHLORINE SOLUTIONS

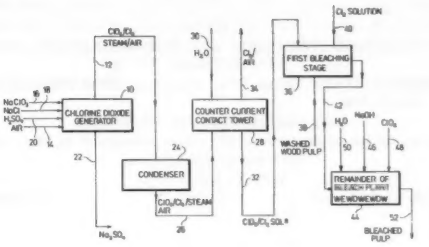
Douglas W. Reeve, Orton, and W. Howard Rapson, Scarborough, both of Canada, assignors to Erco Industries Limited, Islington, Canada

Continuation-in-part of Ser. No. 23,845, Mar. 26, 1979, abandoned. This application Nov. 27, 1979, Ser. No. 98,190

Claims priority, application United Kingdom, Mar. 30, 1978, 12433/78

Int. Cl.[3] **C01B** *11/02;* **D21C** *9/14*

U.S. Cl. 162—88 **12 Claims**



1. A method of bleaching pulp using chlorine dioxide, which comprises:

(a) continuously forming a gaseous mixture of chlorine dioxide, chlorine and steam by:

(i) continuously feeding a sodium chlorate solution to an aqueous acid reaction medium present in a unilocular reaction zone,

(ii) continuously feeding sulphuric acid to said aqueous reaction medium in an amount to maintain the total acid normality of the reaction medium in the range of about 2 to about 4.8 normal,

(iii) continuously feeding sodium chloride, hydrochloric acid or a mixture of sodium chloride and hydrochloric acid to said aqueous reaction medium,

(iv) continuously maintaining said reaction medium at a temperature of about 55° to about 85° C. while maintaining said reaction zone under a subatmospheric pressure of about 80 to about 300 mm Hg to cause the formation of chlorine dioxide and chlorine and the evaporation of water from the reaction medium,

(v) continuously depositing anhydrous neutral sodium sulphate from the reaction medium in said reaction medium in said reaction zone once the reaction medium becomes saturated thereby after start up, and

(vi) continuously removing the gaseous mixture of chlorine dioxide, chlorine and steam from the reaction zone;

(b) continuously cooling said gaseous stream to a temperature of about 15° to about 55° C. to cause condensation of at least a substantial proportion of the steam therefrom to provide a chlorine dioxide- and chlorine-containing gas stream;

(c) continuously contacting the latter gas stream with water having a temperature of about 3° to about 10° C. at a flow rate sufficient to form an aqueous solution of chlorine dioxide and chlorine containing about 8 to about 9 grams per liter of chlorine dioxide and about 1.5 to about 1.8 grams per liter of chlorine, and a gaseous chlorine stream; and

(d) bleaching a cellulosic fibrous material pulp for about 10 to about 60 minutes at a temperature of about 35° to about 70° C. in an aqueous suspension having a consistency of about 2 to about 16% by weight of pulp and containing dissolved organic material in an amount of about greater than 2 to about 10% by weight TOC on pulp at an overall

equivalent chlorine concentration of about 2 to about 10% by weight of the pulp, by:

(i) subjecting said suspension to a first bleaching step at an acid pH value using at least part of said aqueous solution of chlorine dioxide and chlorine formed in step (c), and

(ii) without an intermediate washing step, subjecting the suspension to a second bleaching step at an acid pH using a chlorine solution and commencing about 5 seconds to about 10 minutes after commencement of said first bleaching step, the chlorine dioxide in said aqueous solution of chlorine dioxide and chlorine constituting about 20 to about 90% of the total available chlorine used in said first and second bleaching steps.

4,325,784

COMBINED SIZE PRESS AND BREAKER STACK AND METHOD

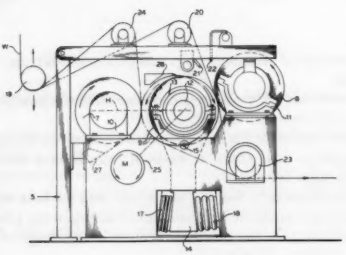
George L. Dreher, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 20, 1980, Ser. No. 132,126

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.³ D21H *1/10*

U.S. Cl. 162—135 **17 Claims**



1. In a paper web processing apparatus, wherein a paper web travels continuously from a supply to a disposition point, the combination comprising:

supporting structure;

a rotary breaker roll mounted in an operatively stationary location on said supporting structure;

a rotary coating press roll mounted in an operatively stationary location on said supporting structure substantially spaced from said breaker roll;

a rotary intermediate roll located between, and of a diameter less than the spacing between, said breaker roll and said press roll;

means shiftably mounting said intermediate roll on said supporting structure within alternate nipping range relative to said breaker roll and said press roll;

means for guiding the paper web to run selectively through the nip of said breaker and intermediate rolls or through the nip of the press and intermediate rolls;

means for actuating said mounting means for selectively alternately shifting said intermediate roll into nipping relation with either said breaker roll or said press roll;

and means for applying coating material to the paper web while running through the nip of said intermediate and coating press rolls.

11. A method of processing a paper web traveling continuously from a supply to a disposition point, through apparatus including a rotary breaker roll and a rotary coating press roll mounted in relatively stationary and spaced relation to one another and having between them an intermediate roll of a diameter less than the spacing between the breaker and press rolls and alternately shiftable into nipping relation selectively with either the breaker roll or the press roll, the method comprising:

selectively shifting said intermediate roll into nipping relation to the breaker roll and guiding the paper web to travel through the resulting nip for breaking action on the web;

alternately selectively shifting the intermediate roll into nipping relation to said press roll and guiding the paper web through the resulting coating nip;

and applying coating material to the paper web while traveling through the nip of the intermediate and press rolls.

4,325,785

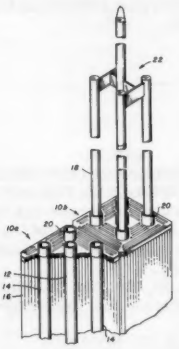
METHOD AND APPARATUS FOR MEASURING THE REACTIVITY OF A SPENT FUEL ASSEMBLY

Robert J. Klotz, Simsbury, and Donald W. Stephen, West Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 18, 1979, Ser. No. 40,266

Int. Cl.³ G21L *17/00*

U.S. Cl. 376—154 **10 Claims**



1. An apparatus for sequentially comparing the subcritical multiplication of a plurality of nuclear fuel assemblies having an identical array of at least two longitudinally extending, spaced apart, hollow tubes contained within the assembly, comprising:

a first rod adapted to reciprocate within a first tube of an assembly;

a second rod adapted to reciprocate within a specific second tube of the assembly;

a neutron source fixedly positioned relative to the first rod and movable therewith into the first tube;

a neutron flux detector fixedly positioned relative to the second rod and movable therewith into the second tube;

means for accurately fixing the elevation of the detector relative to the source when the detector and source are within the same assembly; and

means for receiving the output signal of the detector and for converting the output signal to a flux measurement.

4,325,786

SPACER GRID FOR REDUCING BOWING IN A NUCLEAR FUEL ASSEMBLY

William D. Wohlsen, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 29, 1979, Ser. No. 98,463

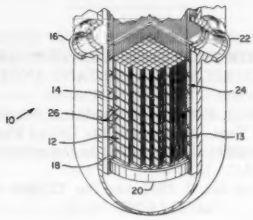
Int. Cl.³ G21C *3/30*

U.S. Cl. 376—442 **8 Claims**

1. In a nuclear fuel assembly including a plurality of elongated parallelly spaced fuel rods and a plurality of metal grids axially separated along said fuel rods, each grid having a plurality of oppositely facing perimeter plates forming a perimeter strip closely surrounding all said fuel rods and a plurality of

interlaced straps extending between said perimeter plates, said straps defining openings through which said fuel rods traverse the grids and carrying means thereon for spacing the fuel rods in the assembly, wherein the improvement comprises:

at least one of said grids being located near the assembly



midplane and further including a cross member made of a second material having a higher coefficient of thermal expansion than said straps and interposed between oppositely facing perimeter plates such that when the assembly thermally expands said one grid will be larger in transverse section than the other grids in the assembly.

4,325,787

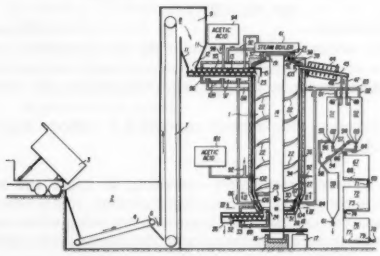
APPARATUS FOR RETORTING COMMINUTED OIL SHALE

Louis Strumskis, Ocala, Fla., assignor to Georgia Oil and Gas Company, Ocala, Fla.

Filed Jul. 31, 1980, Ser. No. 173,944

Int. Cl.[3] C10B *1/04, 53/06, 57/06, 57/12*

U.S. Cl. 202—106 **13 Claims**



1. A continuously operable retort-type processing system for recovery of petroleum products from comminuted oil shale and like solid particulate oil-yielding raw material, comprising in combination: a heat exchange jacket for heating the retort by indirect heat exchange; insulation means for insulating the retort; feed means for the introduction of a continuous stream of particulate solid raw material into the upper portion of the retort; heat exchanger preheating means associated with the feed means for indirectly preheating the stream of particulate solid material before it enters the retort; discharge means for discharging spent solids from the bottom portion of the retort; means for discharging gaseous products from the retort; condenser means for condensing volatilized liquids from the gaseous products discharged from the retort; stirring means, mounted on a driven shaft and disposed at spaced intervals in a radially projecting array located along the length of the shaft, and on longitudinally separated axially disposed vertical portions of the shaft, adapted for stirring of particulate solid material in the retort and enhancing migration of the material from the intake to the spent solids outlet; heating means for supplying a heated fluid to the lower portion of the heat exchange jacket and withdrawing the fluid from the upper portion thereof, whereby a stream particulate material in the retort is indirectly heated therewith to progressively increasing temperatures as the particulate material passes downwardly through the retort; steam injection means for admixing steam with the stream of particulate material both in the heat exchanger preheating means and in the retort before reaching the bottom of the retort; and acetic acid injection means wherein said acetic acid injection means comprises a source of acetic acid and means for admixing acetic acid with the stream of particulate material in the retort before the latter reaches the bottom of the retort.

4,325,788

DISTILLATION APPARATUS WITH SOLAR TRACKER

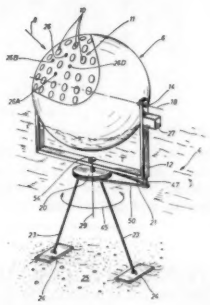
Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094

Division of Ser. No. 880,882, Mar. 16, 1978, Pat. No. 4,276,122.

This application Dec. 30, 1980, Ser. No. 221,373

Int. Cl.[3] C02F *1/14;* **G01J** *1/20*

U.S. Cl. 202—234 **9 Claims**



1. A solar distillation apparatus to remove impurities from salt water or contaminated fresh water comprising:

an enclosed shell;

at least one heating element mounted within said shell;

at least one light focussing system supported by said shell for focussing solar radiation onto said heating element;

a control system for detecting the solar radiation and orienting the light focussing system with the path of the sun;

means for introducing salt water or contaminated fresh water into a heat transfer relationship with the heating element to vaporize said water within said shell;

a condensation surface comprising an inner surface of said shell for liquifying said vapor into potable fresh water condensate;

means for cleaning and reshaping said heating element; and,

tracking means for orienting said light focussing system so as to be incident with said solar radiation.

4,325,789

PROCESS FOR SEPARATING OFF PHENOL FROM A MIXTURE THEREOF WITH A CRESOL

Alfredo Wust, Leverkusen, and Knut Hammerström, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,171

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904831

Int. Cl.[3] B01D *3/36*

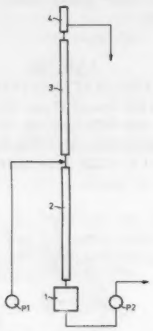
U.S. Cl. 203—67 **8 Claims**

1. A process for separating phenol from the mixture of the same with ortho cresol which comprises adding to the mixture a component selected from the group consisting of:

A. A halogenated, saturated or unsaturated aliphatic hydrocarbon or a non-halogenated saturated or unsaturated aliphatic hydrocarbon with a dipole moment of 0 to 0.5 Debye and a boiling point, under 1 bar, of 120° to 220° C.;

B. A cycloaliphatic hydrocarbon with a dipole moment of 1 to 2 Debyes which has a boiling point, under 1 bar, of 150° to 190° C.;

C. A halogenated alkyl benzene or a non-halogenated alkyl benzene with a dipole moment of 0 to 2.5 Debyes which has a boiling point, under 1 bar, or 150° to 190° C.; and



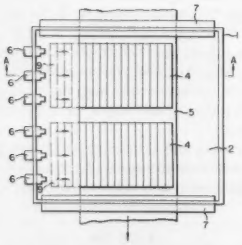
D. A alkylated halogenophenol or a non-alkylated halogenophenol with a dipole moment of 0 to 2.5 Debyes which has a boiling point, under 1 bar, of 150° to 190° C. and distilling off phenol together with said component to leave behind said ortho cresol.

4,325,790

PROCESS FOR MANUFACTURING ELECTRO-GALVANIZED STEEL STRIP

Takeshi Adaniya, and Masaru Ohmura, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,131
Claims priority, application Japan, Feb. 22, 1980, 55-20632
Int. Cl.³ C25D *3/56, 5/08, 7/06, 21/10*
U.S. Cl. 204—27 **1 Claim**



1. In a process for manufacturing an electro-galvanized steel strip, which comprises:

moving a steel strip in an acidic electro-galvanizing bath at a temperature within the range of from 35° C. to 60° C. containing cobalt and chromium in parallel with the plane of at least one anode plate and flowing said electro-galvanizing bath between said steel strip and said anode plate in a direction at right angles to the moving direction of said steel strip, and passing an electric current between said anode plate and said steel strip to provide an electro-galvanizing treatment, thereby forming, on at least one surface of said steel strip, an electro-galvanized layer having excellent bare corrosion resistance and excellent corrosion resistance after chromating;

the improvement characterized by:

keeping the cobalt content in said electro-galvanizing bath within the range of from 8 to 30 g/l, as converted into metallic cobalt, and the chromium content in said electro-galvanizing bath within the range of from 0.1 to 1.5 g/l, as converted into metallic chromium;

and, flowing said electro-galvanizing bath between said steel strip and said anode plate at a flow velocity of at least 0.35 m/sec.

4,325,791

METHOD FOR PROVIDING URANIUM ARTICLES WITH A CORROSION RESISTANT ANODIZED COATING

Forrest B. Waldrop, Powell, and Charles A. Washington, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,865
Int. Cl.³ C25D *11/34*
U.S. Cl. 204—32 R **6 Claims**

1. A method for providing a uranium article with a corrosion-resistant anodized oxide coating comprising the steps of providing an aqueous solution of electrolytes selected from the group consisting of potassium phosphate, potassium hydroxide, ammonium hydroxide, and a mixture of potassium tetraborate and boric acid, maintaining the solution at a pH value in the range of about 2 to 11.5 and at a temperature of at least 75° C., immersing the uranium article into the electrolyte and maintaining a current density of less than about 0.036 A/cm^2 between electrodes for a duration sufficient to provide an equilibrium in the thickness of the oxide coating.

4,325,792

PURIFICATION PROCESS

Daniel J. Vaughan, 36 Paxon Dr., Wilmington, Del. 19803

Filed Mar. 9, 1981, Ser. No. 241,520
Int. Cl.³ C25D *21/18*
U.S. Cl. 204—151 **3 Claims**

1. In the electrolytic purification of an aqueous solution of chromic acid contaminated with dissolved metallic cations by passing electric current through an electrodialysis cell comprising

(a) a catholyte compartment containing a cathode and a catholyte

and

(b) an anolyte compartment containing an anode and an anolyte comprising a contaminated chromic acid solution the anolyte and catholyte compartments being separated by a cation-permeable membrane, the improvement comprising employing as the catholyte an aqueous solution of an inorganic carbonate or bicarbonate which forms carbon dioxide and water on contact with the anolyte, whereby a high-capacity, efficient electrodialytic purification can be carried out without adversely affecting the oxidation state of the chromium ions in the anolyte.

4,325,793

CATALYSIS OF PHOTOCHEMICAL PRODUCTION OF HYDROGEN FROM WATER

Horst Kisch, Mulheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle m.b.H., Mulheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 127,013, Mar. 4, 1980, abandoned. This application May 26, 1981, Ser. No. 266,865
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908663
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—157.1 R **14 Claims**

1. Process for the catalytic splitting of water to provide hydrogen, comprising irradiating with actinic light an aqueous solution containing a catalyst comprising a complex compound of a metal of the group I_b, II_b, IV_b, V_b, VI_b, VII_b and VIII of the periodic system or magnesium, having ligands linked to the

metal atom via two sulfur atoms or via one sulfur atom and one nitrogen atom, thereby to split the water and form hydrogen.

4,325,794

COMBINED VISIBLE LIGHT AND THERMALLY ACTIVATED CONTINUOUS POLYMERIZATION PROCESS

Wood E. Hunter; Kenneth A. Kun, and Wallace B. Ramsey, all of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 2, 1980, Ser. No. 155,268
Int. Cl.[3] C08F *2/48*
U.S. Cl. 204—159.23 **9 Claims**

1. A continuous polymerization process for preparing water-soluble polymers of ethylenically unsaturated water-soluble monomers which comprises:

(a) casting upon a continuous belt apparatus to form a film having a thickness of $\frac{1}{8}$ inch to 1 inch an aqueous monomer solution having a monomer concentration of 25 percent to 75 percent by weight, said monomer solution also containing a photoreducible dye in a concentration of 1×10^{-7} to 1×10^{-4} moles/liter, a mild reducing agent in a concentration of 1×10^{-5} to 1×10^{-2} moles/liter and a thermal initiator in a concentration of 1×10^{-5} to 1×10^{-2} moles/-liter;

(b) passing the solution under a series of lights which emit visible light at an intensity of 1000- to 10,000-foot candles and controlling the temperature of the monomer solution in the range of 5° C. to 45° C.;

(c) allowing polymerization to initiate in an atmosphere of air or an inert gaseous substance;

(d) shutting off the lights when the exotherm has increased the temperatures of the partially converted monomer solution to a level sufficient to activate the thermal initiator; and

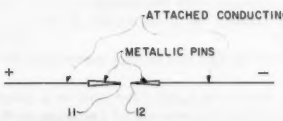
(e) allowing the polymerization to be completed to a high degree of conversion.

4,325,795

PROCESS FOR FORMING AMBIENT TEMPERATURE SUPERCONDUCTING FILAMENTS

Ronald C. Bourgoin, 18 Woodfern Cir., Greenville, S.C. 29615

Filed Oct. 31, 1980, Ser. No. 202,680
Int. Cl.[3] C25B *7/00*
U.S. Cl. 204—180 R **11 Claims**



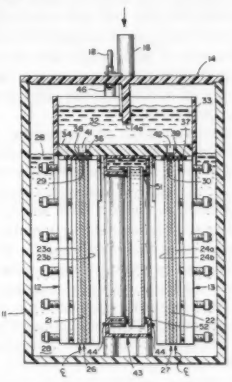
1. The process of forming filaments which exhibit properties associated with superconductivity at ambient temperatures comprising: suspending a conductor material within a fluid insulator material; heating at least the conductor material to reduce particulate size to colloidal dimensions; providing at least two electrodes within said conductor/insulator fluid; applying a voltage across said electrodes whereby conductor filaments are formed therebetween; and linearly moving said electrodes apart while continuing to apply voltage thereacross whereby extended filament length can be obtained.

4,325,796

VERTICAL GEL SLAB ELECTROPHORESIS APPARATUS AND METHOD THEREFOR

Peter S. Hoefer, San Francisco, and Michael G. Whitesides, Daly City, both of Calif., assignors to Hoefer Scientific Instruments, San Francisco, Calif.

Continuation-in-part of Ser. No. 121,288, Feb. 13, 1980, Pat. No. 4,290,871, which is a division of Ser. No. 714, Jan. 3, 1979, Pat. No. 4,224,134. This application Jan. 30, 1981, Ser. No. 229,957
Int. Cl.[3] B01D *57/02*; G01N *27/26*
U.S. Cl. 204—180 G **8 Claims**



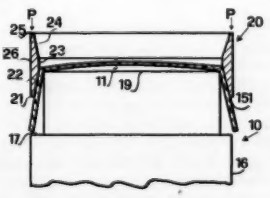
6. A vertical gel slab electrophoresis method using a pair of sample units each including a pair of clamped together spaced plates for containing gel and with open top and bottom slots and including a casting stand for holding said units vertical, and an upper buffer solution container having a pair of apertures, said method comprising the following steps: locking said sample units in said stand in a vertical position to seal said bottom slots to prevent leakage of gel; filling at least one sample unit with gel and polymerizing; locking said upper buffer solution container to said sample units and sealing said upper slots against said apertures to provide liquid communication with an upper buffer solution; and unlocking and removing said casting stand-container combination from said sample units whereby electrophoresis may be accomplished.

4,325,797

MEMBRANE MOUNTING METHOD AND MEMBRANE-ENCLOSED AMPEROMETRIC CELL

John M. Hale, Meinier, and Eugen Weber, Hinwil, both of Switzerland, assignors to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,291
Int. Cl.[3] G01N *27/30*
U.S. Cl. 204—195 P **31 Claims**



1. In the method of mounting and securing a membrane formed of a flexible polymer film on an amperometric cell

having a substantially cylindrical cell end frontally provided with an electrolyte-bearing sensor face by means of a removable annular holding member; the improvement consisting of using as said holding member a substantially non-resilient and creep-resistant die ring having (a) a cylindrical inner surface slidingly fitting onto said cylindrical cell end and (b) at least one tapered inner surface portion outwardly extending from said cylindrical inner surface toward a leading end portion of said die ring; moving said leading end portion of said die ring over a predetermined length of said cylindrical cell end for deep-drawingly shaping said polymer film between said die ring and said cylindrical cell end and irreversibly forming a cup-shaped membrane portion extending over said electrolyte-bearing sensor face and an adjacent portion of said cylindrical cell end, said cup-shaped membrane portion being sealingly held by said die ring on said cylindrical cell end during operation of said amperometric cell.

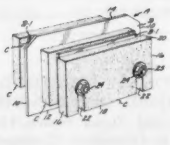
17. In a membrane-enclosed amperometric cell having a substantially cylindrical cell end frontally provided with an electrolyte-bearing sensor face, a membrane formed of a flexible polymer film extending over said sensor face and having a circumferential portion in contact with said cylindrical cell end; and a removable annular holding member around said circumferential portion of said membrane for sealingly pressing said circumferential portion of said membrane onto said cell end; the improvement wherein said annular holding member is a substantially non-resilient and creep-resistant die ring having (a) a cylindrical inner surface slidingly fitting onto said cylindrical cell end and (b) at least one tapered inner surface portion outwardly extending from said cylindrical inner surface toward a leading end portion of said die ring; and wherein said membrane has a permanently formed cup-shaped portion extending over said electrolyte-bearing sensor face and an adjacent portion of said cylindrical cell end, said cup-shaped membrane portion being sealingly held by said die ring on said cylindrical cell end during operation of said amperometric cell.

4,325,798

SELF-ENERGIZING WATER TREATMENT ACCESSORY

Michael H. Mack, 1511 Pipeline Rd., #188, Chino, Calif. 91710

Filed Jun. 27, 1980, Ser. No. 163,436
Int. Cl.[3] C25B *9/00, 11/04*
U.S. Cl. 204—248 **3 Claims**



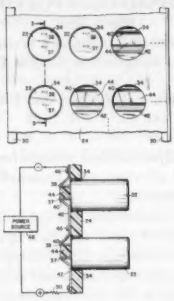
1. A self energizing water treatment assembly that includes:
a. a first generally rectangular copper plate having upper and lower edges and a pair of end edges, with at least one transverse slot that extends upwardly from said lower edge;
b. a plurality of generally rectangular second copper plates and magnesium plates that have lower edges from which transverse slots extend upwardly that may be laterally aligned with said slot in said first copper plate;
c. a metal electrical conducting bolt having a head and a free threaded end that may be inserted in said slots;
d. a plurality of spacers on said bolt that hold said first and second copper plates and magnesium plates in laterally spaced relationship;
e. a nut that engages said threads on said bolt, said bolt when tightened holding said assembly together as an integral unit, said nut when loosened permitting a desired one or all of said plates to be lifted from said bolt and replaced by plates that have not been subjected to water.

4,325,799

FORMATION APPARATUS FOR ELECTROLYTIC CELL

Lester A. Gordy, and David A. Poff, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 145,736, May 1, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,544
Int. Cl.[3] C25D *17/08*
U.S. Cl. 204—297 W **14 Claims**



1. A system for electrical activation of a set of electrochemical cells each of which is formed with an end wall having first and second terminals protruding therefrom and asymmetrically positioned relative to the center of said end wall, said system comprising:
a panel having a row of apertures, each of said apertures being configured for admitting the end wall of a cell and the terminals thereof;
first and second strip conductors having corresponding edges parallel to said row of apertures and positioned for engagement with said terminals of said cells upon insertion of the end walls of said cells into respective ones of said apertures, said corresponding edges being asymmetrically positioned relative to said row of apertures in correspondence with the asymmetry in the location of said terminals of a cell for keying the orientation of a cell inserted through one of said apertures, thereby keying the engagement of said first terminal with said first conductor.

4,325,800

TWO-STAGE COAL LIQUEFACTION PROCESS WITH INTERSTAGE GUARD BED

Joel W. Rosenthal, El Cerrito, and Christopher W. Kuehler, Larkspur, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 943,586, Sep. 18, 1978, Pat. No. 4,283,268. This application Sep. 26, 1980, Ser. No. 191,455
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.[3] C10G *1/00, 1/06, 45/00, 25/00*
U.S. Cl. 208—8 LE **9 Claims**

1. A process for the liquefaction of coal comprising the steps of
(a) substantially dissolving subdivided coal in a dissolving stage with a solvent the presence of hydrogen to form a first effluent mixture containing solvent, dissolved coal, and insoluble solids;
(b) passing solvent, dissolved coal and insoluble solids from said first effluent mixture with hydrogen through a guard bed of solid porous contact material to substantially reduce the metals content of said first effluent by hydrogenation, to provide a second effluent containing solvent, dissolved coal, and insoluble solids;
(c) passing a slurry-containing solvent, dissolved coal and insoluble solids from said second effluent to a hydrocracking stage containing hydrocracking catalyst and operating under hydrocracking conditions.

4,325,801

THREE-STAGE COAL LIQUEFACTION PROCESS

Christopher W. Kuehler, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 106,580, Dec. 26, 1979. This application Sep. 10, 1980, Ser. No. 183,114
The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.
Int. Cl.[3] C10G *1/06, 1/00*
U.S. Cl. 208—10 3 Claims

1. A three-stage process for liquefying coal which comprises:

forming a coal-solvent slurry by mixing subdivided coal with a solvent;

passing said slurry through a dissolving stage to substantially dissolve said coal and produce an effluent comprising dissolved coal, solvent, insoluble solids, and heptane insolubles;

passing effluent containing the dissolved coal and the insoluble solids from said dissolving stage with added hydrogen through a first catalytic reaction stage containing a catalyst having a selectivity for converting heptane insolubles to lower molecular weight compounds, to convert heptane insolubles in said effluent from said dissolution stage to lower molecular weight compounds;

recycling a portion of the effluent from said first catalytic reaction stage for use as solvent; and

passing remaining effluent from said first catalytic reaction stage through a second catalytic reaction stage containing hydrocracking catalyst and operating under hydrocracking conditions.

4,325,802

METHOD OF LIQUEFACTION OF CARBONACEOUS MATERIALS

Clifford R. Porter, Arvada, Colo., and Herbert D. Kaesz, Los Angeles, Calif., assignors to Pentanyl Technologies, Inc., Arvada, Colo.

Filed Nov. 17, 1980, Ser. No. 207,714
Int. Cl.[3] C10G *1/06, 17/00;* C10B *43/00*
U.S. Cl. 208—10 37 Claims

1. A method of producing or converting hydrocarbon liquids from carbonaceous materials, comprising:

contacting the carbonaceous material with a liquefaction facilitating agent selected from the group consisting of metal carbonyls, other low valent metal complexes of the transition metals, derivatives thereof, and mixtures thereof, and water gas to form a reaction mixture,

maintaining the pH of the reaction mixture greater than about 7.5, and

heating the reaction mixture to a sufficient temperature and pressure to obtain liquids from the carbonaceous material.

4,325,803

PROCESS FOR HYDROGENATION/EXTRACTION OF ORGANICS CONTAINED IN ROCK

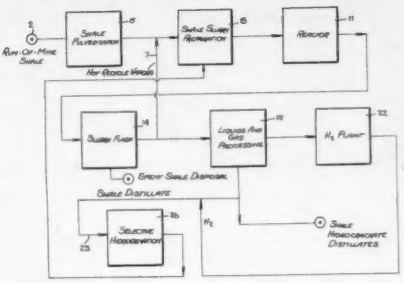
Marvin I. Green, Oradell, and Abraham P. Gelbein, Morristown, both of N.J., assignors to Chem Systems Inc., New York, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,008
Int. Cl.[3] C10G *1/04*
U.S. Cl. 208—11 LE 29 Claims

1. In a method for the separation and recovery of organic material from rock, the improvement comprising the steps of:

(a) forming a slurry comprising rock containing organic material and a hydrogen transfer agent that is liquid at standard conditions;

(b) subjecting said slurry to elevated temperature and pressure; and



(c) subjecting the product of step (b) to adiabatic flash vaporization.

4,325,804

PROCESS FOR PRODUCING LUBRICATING OILS AND WHITE OILS

Gary L. Everett, Chicago Heights, and William C. Hu, Chicago, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 17, 1980, Ser. No. 207,574
Int. Cl.[3] C10G *65/12*
U.S. Cl. 208—58 24 Claims

1. A process for preparing a white mineral oil from a mineral hydrocarbon oil feedstock of lubricating oil viscosity, comprising the steps of:

(a) contacting the mineral hydrocarbon oil feedstock with molecular hydrogen, under hydrocracking conditions, in the presence of a hydrocracking catalyst, to form a hydrocracked oil having an increased viscosity index relative to that of said feedstock;

(b) contacting the product hydrocracked oil of lubricating oil viscosity from step (a) with molecular hydrogen, under hydrogenation conditions to avoid undue cracking in the presence of a sulfur-resistant, non-precious metal hydrogenation catalyst to produce a product suitable for use as a lubricating oil base stock, said base stock having a minor amount of aromatic hydrocarbons, said product hydrogenated oil from step (b) having an aromatic hydrocarbon content greater than about 3% by weight;

(c) contacting at least a portion of the product hydrogenated oil from step (b) with molecular hydrogen, under hydrogenation conditions in the presence of a sulfur-resistant, non-precious metal hydrogenation catalyst, to produce a product having reduced aromatic hydrocarbon content; and

(d) contacting the product hydrogenated hydrocarbon oil of lubricating oil viscosity from step (c) with molecular hydrogen, under selective hydrogenation conditions in the presence of a selective, precious metal hydrogenation catalyst.

4,325,805

LUBRICATING OIL STABILIZATION

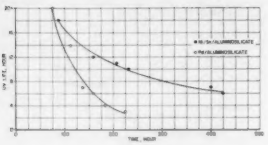
Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 18, 1980, Ser. No. 217,889
Int. Cl.[3] C10G *45/06, 45/36, 65/02*
U.S. Cl. 208—58 9 Claims

1. A process for producing lubicating oil stocks having good ultraviolet stability, comprising:

(a) hydrocracking in a hydrocracking zone a hydrocarbonaceous feedstock;

(b) catalytically dewaxing in a dewaxing zone at least part of the effluent of said hydrocracking zone with a dewaxing catalyst comprising an intermediate pore size zeolite;



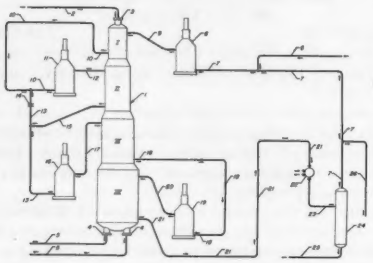
(c) catalytically hydrogenating in a catalytic hydrogenation zone at least part of the effluent of said dewaxing zone by contacting at least part of said dewaxing zone effluent with a stabilizing catalyst comprising nickel or a compound thereof, tin or a compound thereof, and a siliceous matrix.

4,325,806

MULTIPLE STAGE HYDROCARBON CONVERSION WITH GRAVITY FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 5, 1981, Ser. No. 222,468
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—64 **7 Claims**



1. In a multiple stage catalytic conversion system wherein (1) a heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones, (2) reaction product effluent is subjected to interstage heating between successive reaction zones, and (3) catalyst particles are movable through each reactive zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the sequential steps of:

(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;

(b) heating a first portion of the effluent stream from said first reaction zone and introducing said first portion into a second reaction zone maintained at hydrocarbon conversion conditions;

(c) restricting the flow of a second portion of the effluent stream from said first reaction zone and combining said second portion with the effluent stream from said second reaction zone;

(d) heating the combined effluent streams, and introducing said combined streams into a third reaction zone maintained at hydrocarbon conversion conditions;

(e) separating the effluent stream from the last reaction zone in said system to provide a normally liquid product stream and a hydrogen-rich vaporous phase, and recycling at least a portion of said vaporous phase to said first reaction zone;

(f) at least periodically withdrawing catalyst particles from the last reaction zone in said system; and,

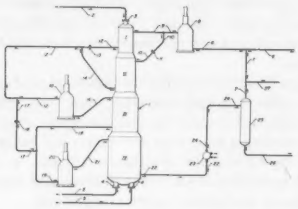
(g) at least periodically introducing fresh or regenerated catalyst particles into the first reaction zone of said system.

4,325,807

MULTIPLE STAGE HYDROCARBON CONVERSION WITH GRAVITY FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 5, 1981, Ser. No. 222,467
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—64 **11 Claims**



1. In a multiple stage catalytic conversion system wherein (1) a heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones, (2) reaction product effluent is subjected to interstage heating between successive reaction zones, and (3) catalyst particles are movable through each reaction zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the sequential steps of:

(a) heating said charge stock and hydrogen, and introducing a first portion thereof into a first reaction zone maintained at hydrocarbon conversion conditions;

(b) restricting the flow of a second portion of the heated hydrocarbon charge stock and hydrogen, and introducing said second portion into a second reaction zone maintained at hydrocarbon conversion conditions;

(c) restricting the flow of the effluent stream from said first reaction zone and combining therewith the effluent stream from said second reaction zone;

(d) heating a first portion of the combined effluent streams and introducing said first portion into a third reaction zone maintained at hydrocarbon conversion conditions;

(e) restricting the flow of a second portion of said combined effluent streams, and admixing therewith the effluent stream from said third reaction zone;

(f) heating the resulting mixture and introducing the same into a fourth reaction zone maintained at hydrocarbon conversion conditions;

(g) separating the effluent from the last reaction zone in said system to provide (i) a normally liquid product stream and (ii) a hydrogen-rich vaporous phase, and recycling at least a portion of said vaporous phase to said first reaction zone;

(h) at least periodically withdrawing catalyst particles from the last reaction zone in said system; and,

(i) at least periodically introducing fresh or regenerated catalyst particles into the first reaction zone in said system.

4,325,808

HYDROCARBON CONVERSION CATALYST SYSTEM AND METHOD

Dae K. Kim, Naperville, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 21, 1980, Ser. No. 170,528
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—65 **7 Claims**

1. A process for reforming a hydrocarbon stream comprising

contacting the hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen and a hydrocarbon conversion catalyst system comprising a physical particle-form mixture of first and second catalysts, the first catalyst comprising at least one noble metal component and a combined halogen deposed on a high surface area, porous refractory inorganic oxide and being free of a crystalline aluminosilicate component, and the second catalyst being free of a noble metal component and comprising at least one metal component deposed on a solid support comprising a crystalline aluminosilicate material having an alkali metal content of less than about 1 percent of its weight, and being dispersed in a high surface area, porous refractory inorganic oxide; each noble metal component in the first catalyst comprising a noble metal, a compound thereof or a mixture thereof; each metal component in the second catalyst consisting essentially of a member selected from the group consisting of chromium, gallium, germanium, indium, lead, manganese, rhenium, technetium, thallium, tin, tungsten, a compound thereof and a mixture thereof; the weight percent of each noble metal component in the first catalyst, calculated as the noble metal element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each combined halogen in the first catalyst, calculated as the halogen element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each metal component in the second catalyst, calculated as the metal element therein and based on the weight of the second catalyst, being in the range of from about 0.1 to about 5; the weight percent of crystalline aluminosilicate material in the second catalyst, based on the weight of the second catalyst, being in the range of from about 1 to about 80; and the weight ratio of the first catalyst to the second catalyst being in the range of from about 1:1 to about 10:1.

4,325,809

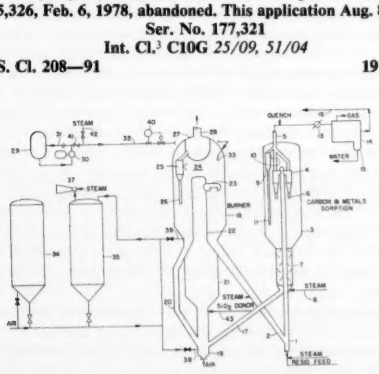
HYDROCARBON PROCESSING

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation of Ser. No. 92,719, Nov. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,928, May 14, 1979, Pat. No. 4,243,514, which is a continuation-in-part of Ser. No. 875,326, Feb. 6, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 177,321

Int. Cl.[3] C10G *25/09, 51/04*

U.S. Cl. 208—91 **19 Claims**



8. In a process for preparing premium products from crude petroleum by fractionally distilling the crude petroleum to separate gasoline and distillate gas oil from a residual fraction having a substantial Conradson Carbon number and metals content and charging the distillate gas oil to catalytic cracking; the improvement which comprises;

(a) contacting said residual fraction in a rising confined vertical column with an inert solid material having a low surface area and a microactivity for catalytic cracking not substantially greater than 20 at low severity, including a temperature of at least about 900° F., for a period of time less than that which induces substantial thermal cracking of said residual fraction, and such that the quantity of such decarbonized petroleum fraction is less than said residual fraction by a weight percent no greater than three times said Conradson Carbon number,

(b) at the end of said period of time separating from said inert solid a decarbonized hydrocarbon fraction of reduced Conradson Carbon number and metals content as compared with said residual fraction,

(c) reducing temperature of the said separated fraction to a level below that at which substantial thermal cracking takes place,

(d) adding said decarbonized hydrocarbon to said distillate gas oil as additional charge to said catalytic cracking,

(e) subjecting said inert solid separated from said decarbonized hydrocarbon fraction and now containing a combustible deposit to air at elevated temperature to remove said combustible deposit by burning and thereby heat the inert solid in a burner operated with a lower fluidized dense phase and upper dilute hot vaporous phase, while mixing a silica donor with said inert solid material,

(f) reacting the mixture of silica donor and inert solid material in the presence of steam to induce migration of silica from said donor to said inert solid material,

(g) separating heated inert solids from hot vapors produced in step (e),

(h) cycling at least a portion of said separated hot inert solid from step (g) to step (a),

(i) and at least periodically withdrawing metal loaded inert solid from step (e) without cycling it to step (a).

4,325,810

DISTILLATE YIELDS BY CATALYTICALLY CO-COKING SHALE OIL AND PETROLEUM RESIDUA

Harvey E. Alford, Amherst, and Robert A. Rightmire, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 1, 1979, Ser. No. 80,832

Int. Cl.[3] C10G *1/06, 11/02, 45/16*

U.S. Cl. 208—112 **15 Claims**

1. In a process wherein a feed material comprising a mixture of a shale oil material and a petroleum material are heated in the substantial absence of oxygen to produce coke and a liquid product, the improvement wherein said feed material contains a hydrogen catalyst selected from the group consisting of hydrogen transfer catalysts, hydrogenation catalysts, and hydrocracking catalysts.

4,325,811

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS

Ciro D. Sorrentino, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 8, 1980, Ser. No. 214,470

Int. Cl.[3] C10G *11/00;* **B01J** *49/00*

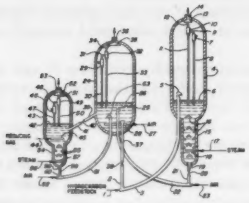
U.S. Cl. 208—113 **12 Claims**

1. In a process for the cyclic, fluidized catalytic cracking of a sulfur-containing hydrocarbon feedstock which comprises (i) cracking said feedstock in a reaction zone through contact with solid particles to produce lower boiling hydrocarbons and cause a deposit of sulfur-containing coke on said particles, wherein said solid particles comprise cracking catalyst and a regenerable sulfur oxide absorbent; (ii) passing coke-containing solid particles from the reaction zone to a regeneration zone; (iii) removing said sulfur-containing coke deposit from the solid particles in said regeneration zone by burning with an oxygen-containing gas, thereby forming sulfur oxides; (iv) absorbing with said absorbent at least a portion of the sulfur oxides produced by said burning of the sulfur-containg coke deposit in said regeneration zone; and (v) passing coke-depleted solid particles from the regeneration zone to the reaction

zone; a method for decreasing emissions of sulfur oxides from the regeneration zone which comprises:

(a) continuously withdrawing a stream of coke-depleted solid particles having sulfur oxides absorbed therein from the regeneration zone and passing said stream to a reducing zone;

(b) contacting said stream in the reducing zone with a reducing gas at a temperature in the range from about 590° to



about 820° C., said reducing gas comprising at least one component selected from the group consisting of hydrogen and hydrocarbons, whereby absorbed sulfur oxides in said stream of particles are released as a sulfur-containing gas; and

(c) after said contacting with the reducing gas in said reducing zone, passing the stream of particles back to the inventory of solid particles which is circulated between said reaction and regeneration zones.

4,325,812

PROCESS FOR CRACKING HEAVY HYDROCARBONS INTO LIGHT OILS AND PRODUCING HYDROGEN

Kuniaki Fujimori, Tokyo; Teruo Suzuka, Kawaguchi; Yukio Inoue, Urawa, and Shirou Aizawa, Toda, all of Japan, assignors to Research Association for Residual Oil Processing, Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,617

Claims priority, application Japan, Sep. 29, 1979, 54/124735

Int. Cl.³ C10G *11/04*

U.S. Cl. 208—119 **15 Claims**

1. A process for cracking a heavy hydrocarbon to form a light oil and for producing hydrogen by the use of a catalyst containing at least 30 wt% Fe which comprises

a first step wherein steam and heavy hydrocarbon are simultaneously contacted with the catalyst in a reduced state to produce hydrogen, cracked gases, and cracked light oils, to oxidize the reduced-state catalyst, and to deposit coke on the catalyst, and

a second step wherein the oxidized-state catayst on which said coke is deposited is contacted with an oxygen-containing gas insufficient for achieving complete combustion of the coke, to thereby partially combust the coke and regenerate said catalyst to a reduced state.

4,325,813

PROCESS FOR PRODUCTION OF HIGH OCTANE GASOLINE FROM CATALYTIC CRACKING UNIT

Stanley M. Brown, Scotch Plains; William J. Reagan, Englishtown, and Gerald M. Woltermann, Middletown, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Jul. 30, 1980, Ser. No. 173,532

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **5 Claims**

1. In a process for catalytic cracking of a hydrocarbon charge to produce gasoline by contacting the charge at cracking temperature with a particle form solid cracking catalyst containing a zeolite whereby components of the charge are converted by cracking to lower boiling hydrocarbons including a gasoline fraction with concurrent deposition on the catalyst of an inactivating carbonaceous contaminant, recovering gasoline from said products of conversion, optionally steam stripping hydrocarbon from catalyst, regenerating catalytic cracking activity of the contaminated catalyst by burning carbonaceous deposit therefrom, and contacting catalyst so regenerated with additional such charge, whereby the catalyst declines in activity over repeated cycles of charge contact and regeneration, the average activity of the catalyst inventory being maintained at substantially constant equilibrium values by replacing a portion of the catalyst inventory with fresh catalyst of activity above said equilibrium values;

the improvment whereby the octane rating of said gasoline fraction is maintained at a high level over repeated cycles of charge contact and regeneration, which comprises using fresh catalyst particles containing alkali metal oxide of less than about 1.5% by weight of zeolite content, maintaining the alkali content of said hydrocarbon charge below 0.5 ppm and controlling the amount of alkali metal oxide that comes into contact with catalyst inventory throughout cracking, stripping and regeneration so as to maintain alkali metal oxide content of equilibrium catalyst below 2.0% based on the weight of the zeolite of said catalyst in fresh condition.

4,325,814

CATALYTIC CRACKING PROCESS UTILIZING A COPPER CHROMITE OXIDATION CATALYST

Benjamin Gross, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 47,503, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,072, Dec. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 511,151, Oct. 2, 1974, abandoned. This application Oct. 15, 1980, Ser. No. 197,252

Int. Cl.³ C10G *11/05, 11/18;* **B01J** *29/38, 21/20*

U.S. Cl. 208—120 **3 Claims**

1. In a process for the catalytic cracking of gas oil to produce products boiling in the motor fuel range, wherein said gas oil is contacted with a porous acidic solid catalyst in a cracking vessel at conversion conditions including elevated temperatures and the absence of added hydrogen so as to convert said gas oil to lower molecular weight products with deposit on said catalyst of a deactivating solid carbonaceous contaminant resulting from said cracking, the so deactivated catalyst being transferred to a regeneration vessel in which oxidation of said carbonaceous deposit proceeds in the presence of air with generation of carbon monoxide and carbon dioxide and the regenerated catalyst at elevated temperature is transferred from said regeneration vessel to said cracking vessel to catalyze further cracking and supply at least part of the heat of reaction required by said cracking, the improvement which comprises:

conducting said cracking and said regeneration with an inventory of solid, porous, acidic cracking catalyst particles and particles of a copper chromite oxidation catalyst in admixture with alumina and limiting the concentration of said oxidation catalyst to an amount great enough to promote oxidation of CO and inadequate to substantially increase the generation of coke and hydrogen in said reaction vessel as compared with a like catalyst free of such metal, said amount being less than 500 ppm based on total catalyst inventory.

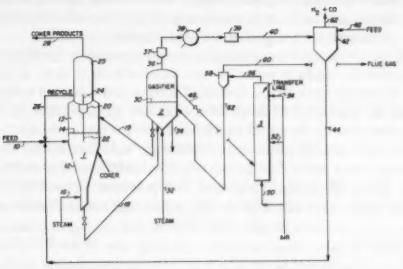
2. The process of claim 1, wherein said solid porous acidic cracking catalyst comprises a crystalline aluminosilicate zeolite having a pore size greater than 6 Angstrom units.

3. The process of claim 1, wherein copper chromite is present in an amount ranging from 50–150 ppm.

4,325,815
CATALYTIC FLUID COKING AND GASIFICATION PROCESS

William J. Metrailer, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 2, 1980, Ser. No. 183,435
Int. Cl.[3] C10G 9/28
U.S. Cl. 208—127 19 Claims



1. An integrated coking and gasification process which comprises the steps of:

(a) reacting a carbonaceous chargestock in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions to produce a vapor phase product including normally liquid hydrocarbons, and coke, said coke depositing on said fluidized solids;

(b) reacting a portion of said solids with a coke deposit thereon with steam in a gasification zone maintained at gasification conditions to produce a catalytic partially gasified coke having a high surface area and a gaseous stream comprising hydrogen;

(c) recycling a first portion of said partially gasified coke resulting from step (b) to contact said vapor phase product of step (a) and thereby catalytically crack at least a portion of said normally liquid hydrocarbons;

(d) reacting a second portion of said catalytic partially gasified coke resulting from step (b) with a molecular oxygen-containing gas in a burning zone at burning conditions to burn a portion of said partially gasified coke and produce a gas comprising carbon dioxide and thereby heating the remaining partially gasified coke; and

(e) recycling a portion of said heated remaining partially gasified coke from said burning zone to said gasification zone.

4,325,816
HYDROCARBON DEHYDROCYCLIZATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

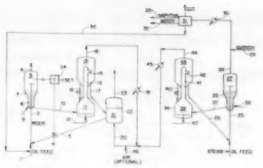
Continuation-in-part of Ser. No. 57,623, Jul. 16, 1979, Pat. No. 4,250,020, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Dec. 8, 1980, Ser. No. 214,390
The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.
Int. Cl.[3] C10G 35/06; C07C 2/52
U.S. Cl. 208—139 25 Claims

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing catalytically effective amounts of a halogen component, a germainium component and a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,325,817
CONTROL OF EMISSIONS IN FLUE GAS

David B. Bartholic, Watchung, and John W. Byrne, Saddle Brook, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 901,346, May 1, 1978, Pat. No. 4,284,494. This application Jul. 25, 1980, Ser. No. 172,333
Int. Cl.[3] C10G 51/04, 55/06
U.S. Cl. 208—164 4 Claims



1. In a process for catalytic cracking of sulfur containing hydrocarbon charge prepared by selective vaporization of crude petroleum or a residual fraction thereof in contact with a rising vertical column of substantially inert solid material at a temperature of about 900° F. or higher for a residence time which does not cause substantial cracking, separating said solid material from so vaporized hydrocarbons and contacting said solid material with air to burn off carbonaceous material deposited thereon and produce first products of combustion and contacting the so vaporized hydrocarbons at cracking temperature with a circulating inventory of cracking catalyst which inventory includes a component capable of sorbing oxides of sulfur in an oxidizing atmosphere and of reaction in a reducing atmosphere to release sulfur as hydrogen sulfide whereby the catalyst acquires an inactivating carbonaceous deposit containing sulfur, separating vaporous products of reaction including hydrogen sulfide from circulating catalyst inventory containing said deposit, regenerating the so separated inventory by contact with air at a temperature to burn said carbonaceous deposit thus generating second products of combustion containing oxides of carbon and sulfur and regenerating the catalyst, separating said second products of combustion from regenerated catalyst and returning regenerated catalyst to renewed contact with hydrocarbon charge with reduction of sulfur associated with the regenerated catalyst; the improvement which comprises cooling said first products of combustion and said second products of combustion to a temperature substantially below the temperature of regeneration of said cracking catalyst, combining the said first and second products of combustion and contacting said cooled and combined products of combustion with said regenerated catalyst to thereby induce sorption by said catalyst inventory being returned to contact with said charge of an amount of sulfur oxides greater than that sorbed during said regeneration.

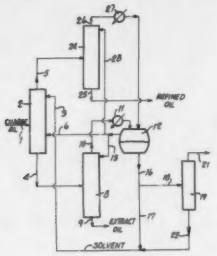
4,325,818
DUAL SOLVENT REFINING PROCESS

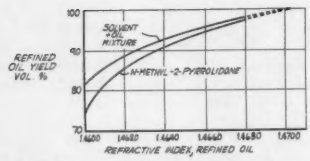
Robert A. Woodle, Nederland, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,926
Int. Cl.[3] C10G 21/20
U.S. Cl. 208—326 5 Claims

1. In a process for solvent refining a petroleum base lubricating oil stock containing aromatic components and paraffinic components effecting separation of said lubricating oil stock into a paraffinic oil raffinate mixture and an aromatics-rich extract mixture wherein said lubricating oil stock is contacted with N-methyl-2-pyrrolidone containing not more than 1 weight percent water in a solvent extraction zone forming a solvent-rich extract phase in said extraction zone containing aromatic components of said oil stock and an oil-rich raffinate phase containing paraffinic components of said oil stock, the improvement which comprises contacting said extract phase in

said extraction zone with a co-boiling paraffinic backwash oil containing a minor amount of N-methyl-2-pyrrolidone and having a boiling range of 190° to 210° C. thereby effecting displacement of dissolved non-aromatic hydrocarbons into said raffinate phase, withdrawing resulting raffinate mixture from said extraction zone, distilling said extract and raffinate mixtures effecting separation of product extract and raffinate from N-methyl-2-pyrrolidone solvent and said co-boiling paraffinic oil by vaporization of said solvent and co-boiling oil,





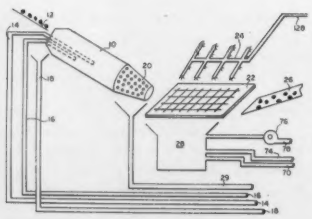
cooling and condensing vapors of co-boiling paraffinic oil and N-methyl-2-pyrrolidone and forming a condensate separating into two liquid phases comprising a solvent-rich phase containing dissolved co-boiling paraffinic oil and a co-boiling paraffinic oil-rich phase containing dissolved solvent, passing said solvent-rich phase to said extraction zone as said solvent therefore, and passing said co-boiling paraffinic oil containing N-methyl-2-pyrrolidone to said extraction zone into contact with said extract phase therein as said paraffinic backwash oil, recovering resulting extract mixture from said extraction zone, and recovering said product raffinate from said distillation zone.

4,325,819

COAL WASHING PLANT

Dwight W. Altizer, 101 Wakefield Rd., Apt. A, Oak Ridge, Tenn. 37830

Filed Sep. 25, 1980, Ser. No. 190,651
Int. Cl.³ B03B 9/00
U.S. Cl. 209—10 **16 Claims**



1. Apparatus for processing effluent resulting from washing coal to recover and clarify water suitable for reuse comprising:

means for screening at least a portion of said effluent to obtain another effluent having particles smaller than particles included in said effluent and dry contaminant particles larger than a first selected size;

means for centrifuging said another effluent along with solids from a water clarifying unit, said solids consisting of contaminant particles bonded together by a binding agent, to obtain solids and a different effluent; and

means for adding a polymer flocculent binding agent and processing said another effluent, said different effluent, and the remaining portions of said effluent to obtain clarified water and solids consisting of particles of contaminant materials held together by said binding agent.

10. In a process for washing raw coal to remove contaminant materials by adding water to raw coal which is then washed and screened such that a first coal is obtained wherein substantially all particles of said first coal are greater than a first selected size of about 28 mesh; and a wherein a discharge of waste is obtained, said waste discharge including a first slurry having water and a first group of particles of coal and contaminant material smaller than said first selected size of about 28 mesh, and a first effluent having water and contaminant particles, a first portion of said first effluent containing contaminant particles greater than said first selected size of about 28 mesh and a second portion of said first effluent containing contaminant particles smaller than said first selected size of about 28 mesh; an improved process for recovering coal fines having a particle size smaller than said first selected size of about 28 mesh comprising the steps of:

separating said first slurry to obtain wet coal having a particle size smaller than said first selected size of about 28 mesh and a second effluent comprised of water and contaminant material having a particle size smaller than said first selected size;

screening said wet coal separated from said first slurry to obtain a second slurry comprised of water and a second group of particles having a particle size smaller than a second selected size, which said second selected size is smaller than said first size, and wet second coal having a particle size between said first selected size and said second selected size; and

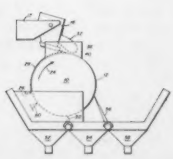
separating said second slurry to substantially separate said second group of particles into third coal having a particle size smaller than said second selected size and larger than a third selected size, and third effluent comprised of water, coal particles smaller than said third selected size, and contaminant material having a particle size smaller than said second selected size.

4,325,820

HIGH TENSION ELECTROSTATIC SEPARATORS

David R. Whitlock, Bernardsville, N.J., assignor to Advanced Energy Dynamics, Inc., Natick, Mass.

Filed Feb. 8, 1980, Ser. No. 119,867
Int. Cl.³ B03C 7/06
U.S. Cl. 209—127 R **16 Claims**



1. In a method for the beneficiation of particulate solid substances by means of an electrification mechanism of the electrostatic separation kind wherein said substance includes a substantial proportion of dust-like particles ranging in size down to about 20 microns, and wherein said method employs the known step of depositing a feed of particulate solid sub-

stance onto a moving surface of a rotor which is surrounded by an ambient gas forming a boundary layer of gas which moves with said surface relative to ambient gas more remote from said surface, the improvement comprising the steps of isolating said moving surface by stripping said boundary layer of gas from said moving surface prior to the region where said feed is deposited, maintaining said feed region substantially free of said boundary layer while depositing said feed on said surface in said feed region after said stripping and prior to reformation of said boundary layer, and forming a mixture of said feed in a layer of gas entrained on said surface beyond said feed region in the direction of rotation of said surface.

4,325,821
AMINE OXIDE PROMOTERS FOR FROTH FLOTATION OF MINERAL ORES

Saul J. Escalera, Dublin, Ohio, assignor to Sherex Chemical Company, Inc., Dublin, Ohio

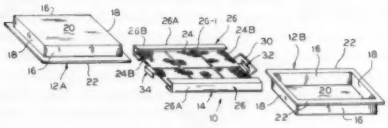
Continuation-in-part of Ser. No. 66,637, Aug. 15, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,286
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—166 **22 Claims**

1. In a froth flotation process where preselected solid particles are selectively separated under froth flotation conditions as a froth phase from remaining solid feed particles as an aqueous phase in the presence of a collector amine, the improvement characterized by the addition of an effective proportion of an amine oxide promoter.

4,325,822
PET LITTER SEPARATOR

John H. Miller, 402 N. 10th St., Mantowoc, Wis. 54200

Filed Jul. 25, 1980, Ser. No. 172,385
Int. Cl.³ B07B *1/04*
U.S. Cl. 209—251 **5 Claims**



1. An animal waste collection and disposal device of the type which contains a litter material into which waste matter is deposited, said device comprising:

an assembly including a pair of opposed substantially rectangular shaped receptacle members,

each of said receptacle members having wall portions defining a litter-receiving chamber which is open over at least a portion of one major planar face of said receptacle, with the open portion of each receptacle being in facing relation to the open portion of the other receptacle;

a substantially rectangular shaped screen member adapted to be positioned in interposed relation between said opposed receptacles;

first guide track means carried by and corresponding to the longitudinal sides of each of said receptacles;

second guide track means carried by said screen member on both opposite sides of said screen member along its longitudinal edges;

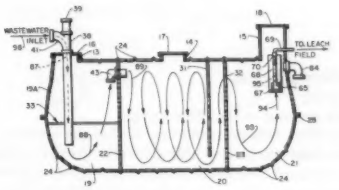
said first guide track means of each of said receptacles being slidably engageable along the longitudinal direction with respective ones of said second guide track means of said screen member respectively to interlockingly and detachably engage said receptacles with said screen member in opposed relation to each other on said opposite sides of said screen member,

said second guide track means protruding outwardly from between said respective ones of said side track means when said screen member is removably attached therebetween, whereby substantially sealed inversion of the assembled receptacles and interposed screen member transfers by gravity said litter material through said screen member from the upper inverted receptacle to the lower receptacle, with said waste matter being retained on the upper surface of said screen member.

4,325,823
WASTEWATER TREATMENT SYSTEM

Thomas S. Graham, Loomis, Calif., assignor to Tom Graham & Associates, Loomis, Calif.

Filed May 12, 1980, Ser. No. 150,206
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—86 **7 Claims**



1. A system for the treatment of wastewater comprising:

a tank;

first and second baffle means dividing the tank into three separate chambers, a first blending chamber, a second decomposition chamber, and a third purification chamber;

means fluidly interconnecting the first chamber with said second chamber and said second chamber with said third chamber

air injecting means for injecting air simultaneously into all of said chambers; and

third baffle means dividing said first chamber into an upper anaerobic compartment and a lower aerobic compartment, said air injecting means opening into said aerobic compartment further including wastewater inlet means opening into the lower aerobic compartment;

wherein said means fluidly interconnecting said first chamber with said second chamber includes a pipe section having an inlet in the upper anaerobic section of said first chamber, and extending through said first baffle means and having an outlet in the upper portion of said second chamber,

said third baffle means is a funnel formed of corrugated material having an opening at the bottom thereof, said means fluidly connecting said second chamber with said third chamber includes an opening in the upper portion of said baffle means dividing said third chamber from said second chamber, said second chamber includes a baffle spaced from both the bottom of said tank and from said baffle means dividing said third chamber from said second chamber, to prevent solids from exiting said second chamber, and said third chamber includes a vertical outlet pipe in the upper portion, and pumping means mounted in said outlet pipe for pumping wastewater out of said tank.

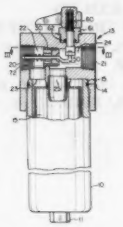
3. In the system of claim **1** wherein said outlet pipe is a stilling tube and also including sensing means associated with said pumping means for sensing the liquid level in said tank and selectively activating or deactivating said pumping means.

4. In the system of claim **3** including alarm means including liquid level measurement means, associated with said thrid chamber for actuating a remote alarm when the liquid level in said tank rises about a predetermined level.

4,325,824
UNHOOKING DIRTY FILTER ALARM

Samuel S. Mitchell, Monroeville, and Abbas F. Vijlee, Pittsburgh, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed Mar. 26, 1981, Ser. No. 247,936
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—90 **5 Claims**

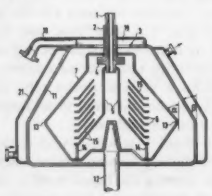


1. A filter comprising
a filter head;
a canister secured to the filter head;
a tubular filter element positioned within the canister;
said filter head comprising inlet and outlet ports for connecting into a hydraulic conduit, passages for delivering fluid from the inlet port to the outer cylindrical surface of the tubular filter element and for delivering fluid from the interior of the filter element to the outlet port;
said filter head having a normally closed bypass valve and a channel between the inlet and outlet ports;
said bypass valve comprising a closure element that is spring biased in the closed position which bias can be overcome by differential pressure across the filter element;
a piston pin fixed to said closure element having an extension with a bend therein to form a generally perpendicular presser foot;
said filter head having a pointer shaft journaled therein being perpendicular to the axis of said piston pin and offset from said axis, crank extending from said pointer shaft extending across the travel path of said presser foot such that when the closure element moves axially it causes the pointer shaft to rotate if the presser foot presses against upon the crank arm;
said pointer shaft extending through the filter head to the exterior whereby rotation of the rod may be observed.

4,325,825
SEPARATOR

Heinz Schütte, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,341
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916856
Int. Cl.³ B01D *21/26;* **B04B** *11/00*
U.S. Cl. 210—371 **13 Claims**

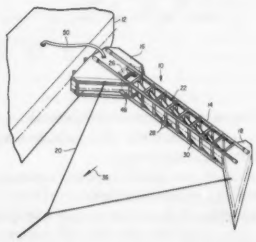


1. In separator apparatus for separating a mixture of at least two liquids that are immiscible with each other and that contains solid particles having a specific gravity greater than the heavier of the two liquids, including a rotating drum with a biconic circumferential wall formed of two oppositely-directed conic surfaces joined at the bases thereof to define an equator, the wall being axially inclined from said equator at a predetermined inclination angle equal to or greater than the natural angle of repose of said solid particles and the drum having openings at the equator thereof through which the separated heavier liquid and solid particles can pass; means for injecting said mixture into the drum; means for conducting the lighter of the separated liquids from the drum; static pressure chamber means surrounding the drum to receive the heavier liquid and solid particles and holding, during operation, a fill of said heavier liquid surrounding said drum outwardly beyond a predetermined nominal radial level; and means for conducting the heavier liquid from said static pressure chamber means; the improvement wherein said apparatus comprises means for entraining said heavier liquid in the static pressure chamber means to rotate substantially synchronously with said drum, and wherein said means for conducting the heavier liquid includes discharge means disposed at said nominal radial level for maintaining the radial level of the rotating heavier liquid in the static pressure chamber means at said nominal radial level at a predetermined distance from the axis of said drum while said heavier liquid is entrained to rotate with said drum, so that the pressure of said heavier liquid is controlled and discharging of the lighter liquid into the static pressure chamber means is prevented.

4,325,826
OIL SWEEPER METHOD AND APPARATUS

Peik J. van Waveren, Vlaardingen, and Ary de Vrij, Puttershoek, both of Netherlands, assignors to Hydrovak Systems (Holland) B.V., Vlaardingen, Netherlands

Filed Sep. 4, 1980, Ser. No. 184,138
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—776 **7 Claims**



1. Oil sweeper apparatus adapted to sweep an oil film from oncoming surface water approaching the apparatus from a generally transverse direction relative to its length, comprising:
(a) an elongated structural framework adapted to be placed in the water;
(b) a surface skimmer located at one end of the framework;
(c) a pair of parallel, longitudinally extending, vertical screens supported on opposite longitudinal sides of the framework, the screens adapted to intersect the water line when the apparatus is placed in the water;
(d) the forward screen relative to the water approach direction comprising multiple, water impervious panels, each panel pivotally mounted to the framework for swinging movement about a vertical swinging axis;
(e) the rearward screen being impervious to water;
(f) means for selectively adjusting and setting the angles of the pivotable panels about their respective swing axes, whereby the panels can be set to approach the rearward screen to thereby, with the rearward screen, deflect on-

coming water passing across and between the panels, and between the screens, toward the skimmer.

4,325,827

FUEL AND LUBRICATING COMPOSITIONS CONTAINING N-HYDROXYMETHYL SUCCINIMIDES

Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 60,280, Jul. 25, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,129

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A **8 Claims**

1. A lubricating oil composition formulated for use in the crankcase of an internal combustion engine said composition comprising a major amount of a lubricating oil and a minor friction-reducing amount of an oil-soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide wherein said hydrocarbyl group contains about 12–36 carbon atoms said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxymethyl aliphatic hydrocarbyl succinimide.

5. An additive concentrate adapted for addition to lubricating oil for use in the crankcase of an internal combustion engine said concentrate containing an oil soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxy-methyl aliphatic hydrocarbyl succinimide.

8. Liquid hydrocarbon fuel adapted for use in an internal combustion engine containing a friction-reducing amount of a fuel-soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide wherein said hydrocarbyl contains about 12–16 carbon atoms said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxymethyl aliphatic hydrocarbyl succinimide.

4,325,828

DETERGENT BLEACH COMPOSITIONS

Dennis Postlethwaite, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Mar. 19, 1981, Ser. No. 244,499

Claims priority, application United Kingdom, Mar. 27, 1980, 10318/80; Jun. 16, 1980, 19605/80

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—102 **5 Claims**

1. Solid detergent bleach composition having an improved bleaching effect at substantially all washing temperatures, consisting essentially of:

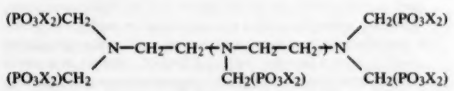
(a) from 3 to 40% by weight of a detergent selected from the group consisting of anionic, nonionic, cationic, and amphoteric detergent and mixtures thereof;

(b) from 1 to 25% by weight of a solid organic peroxyacid compound, having a melting point of at least 50° C.;

(c) from 2 to 40% by weight of an inorganic peroxy compound generating hydrogen peroxide in solution, and

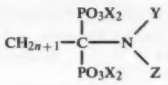
(d) from 0.05 to 5% by weight of a stabilizing sequestering agent selected from the group consisting of:

(i) a compound of the general formula:



wherein n is an integer from 0 to 4 and X is H or an alkali metal, alkaline earth metal or ammonium cation;

(ii) a compound of the general formula:



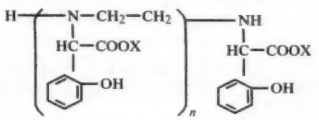
wherein n is an integer from 0 to 2; X is H or an alkali metal, alkaline earth metal or ammonium cation;

Y = CH_2COOX or $CH_2PO_3X_2$

Z = CH_2COOX or $CH_2PO_3X_2$

(X is H or alkali metal, alkaline earth metal or ammonium cation;

(iii) a compound of the general formula:



wherein n is 1–3, and X is H, or an alkali metal, alkaline earth metal or ammonium cation; and

(iv) mixtures thereof.

4,325,829

DETERGENT COMPOSITIONS

Peter M. Duggleby, Wirral, England; Bernhard Kueter, Heidelberg, Fed. Rep. of Germany; Ronald M. Morris, Wirral, England; Horst Poeselt, Bensheim; Hermann Rabitsch, Mannheim, both of Fed. Rep. of Germany, and Reginald V. Scowen, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,128

Claims priority, application United Kingdom, Nov. 12, 1979, 39124/79

Int. Cl.³ C11D *9/14*

U.S. Cl. 252—109 **7 Claims**

1. A particulate alkaline detergent composition for fabric washing consisting essentially of about 5% to about 40% by weight of at least one synthetic detergent compound, and about 10% to about 40% by weight of a mixture of alkali metal tripolyphosphate and alkali metal orthophosphate in the weight ratio of about 20:1 to about 3:1, wherein the composition contains about 2% to about 25% by weight of a mixture of soap and an anionic polyelectrolyte selected from linear polycarboxylates and organic phosponates in the weight ratio of about 10:1 to about 1:1 and nor more than, if any, about 5% by weight of alkali metal pyrophosphate.

4,325,830

THREE RING DIOXANE LIQUID CRYSTALLINE COMPOUNDS

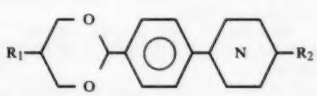
Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 24, 1980, Ser. No. 219,673

Int. Cl.³ C07D *319/04;* **G02F** *1/13;* **C09K** *3/34*

U.S. Cl. 252—299.61 **9 Claims**

1. A compound of the formula:



where R_1 is alkyl or alkoxy and R_2 is alkyl or alkoxy and where ring N is a benzene or a saturated cyclohexane ring.

4,325,831

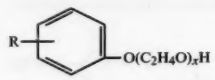
FOAMABLE COMPOSITION

Stuart L. Watson, South Charleston, and Paul M. Westfall, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 12, 1981, Ser. No. 243,083
Int. Cl.[3] B01F *17/02, 17/10, 17/42*
U.S. Cl. 252—354 **9 Claims**

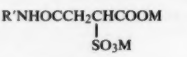
1. A foamable mixture comprising:

(a) 2 to 20 parts of a highly ethoxylated alkylphenol of the formula:



wherein R is a saturated or unsaturated, linear or branched alkyl having from 7 to 20 carbon atoms and x has an average value of from 20 to 200;

(b) 2 to 20 parts of an alkali metal N-alkyl sulfosuccinamate of the formula:



wherein R' is a saturated or unsaturated, linear or branched alkyl having from 16 to 24 carbon atoms and M is hydrogen or an alkali metal atom with the proviso that at least one M group is an alkali metal atom; and

(c) 3 to 40 parts of an alkali metal alkyl sulfate of the formula:

wherein R'' is a saturated or unsaturated, linear or branched alkyl having from 7 to 24 carbon atoms and M' is an alkali metal atom.

4,325,832

ENZYME REFERENCE COMPOSITION

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 17,871, Mar. 5, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 114,009
Int. Cl.[3] G01N *33/16;* **C09K** *3/00*
U.S. Cl. 252—408 **12 Claims**

1. An enzyme reference composition of the type comprising:

(a) at least one enzyme constituent of known value;

(b) from about 20 to about 40 weight percent of at least one alkylene polyol having from 2 to 5 carbon atoms;

(c) from about 3 to about 8 grams per deciliter total protein; and

(d) from about 60 to about 80 weight percent water; characterized in that said total protein consists essentially of human serum albumin.

4,325,833

THREE-STAGE CATALYST REGENERATION

John W. Scott, Ross, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 27, 1980, Ser. No. 163,534
Int. Cl.[3] B01J *29/38, 21/20;* **C10G** *11/18;* **C01B** *21/00*
U.S. Cl. 252—417 **14 Claims**

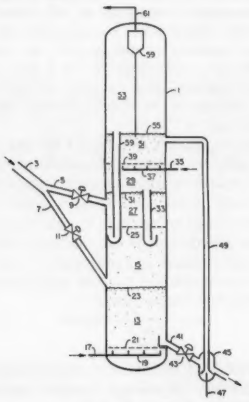
1. A method for burning nitrogen-containing coke off a coke-containing particulate catalyst, which comprises:

(a) separating said coke-containing particulate catalyst into a first portion and a second portion;

(b) burning substantially all coke off said first portion of said coke-containing catalyst with a regeneration gas comprising free oxygen in a first regeneration zone, and burning substantially all carbon monoxide formed in said first zone, sufficient free oxygen being introduced into said first zone to provide at least 1 volume percent residual free oxygen in said regeneration gas after burning said coke and carbon monoxide, whereby nitrogen oxides are formed in said first zone;

(c) passing said regeneration gas from said first zone into a second zone, forming carbon monoxide and carbon dioxide and generating a substantially oxygen-free atmosphere in said second zone by burning coke off said second portion of said coke-containing catalyst and burning carbon monoxide with substantially all said residual free oxygen, and decreasing the amount of nitrogen oxides in said regeneration gas by reacting at least a portion of said nitrogen oxides in said oxygen-free atmosphere to form free nitrogen; and

(d) passing said regeneration gas from said second zone into a third regeneration zone, burning substantially all carbon monoxide generated in said second regeneration zone with additional free oxygen in contact with substantially coke-free catalyst in said third zone.



2. A method according to claim **1** wherein coke in said deactivated catalyst includes a sulfur component, sulfur oxides are formed by burning said coke, and said sulfur oxides are reacted with a solid reactant included with said particulate catalyst in said first regeneration zone to form sulfur-containing solids.

8. A method for burning nitrogen-containing coke off a coke-containing particulate catalyst, which comprises:

(a) introducing a major portion of said coke-containing catalyst into a first fluidized bed comprising substantially coke-free catalyst in a lower zone in a vertically extending regeneration vessel;

(b) passing a regeneration gas comprising free oxygen upwardly through said lower zone, burning substantially all coke off said major portion of coke-containing catalyst in said first bed, and burning substantially all carbon monoxide formed in said first bed within said lower zone, sufficient free oxygen being introduced into said lower zone to provide at least 1 volume percent residual free oxygen in said regeneration gas at the upper end of said lower zone, whereby nitrogen oxides are generated in said lower zone;

(c) introducing a minor portion of said coke-containing catalyst into a second fluidized bed of catalyst in a vertically intermediate zone in said regeneration vessel, passing nitrogen oxides-containing regeneration gas from said

lower zone upwardly through said intermediate zone, forming carbon monoxide and carbon dioxide and generating a substantially oxygen-free atmosphere in said second bed by reacting substantially all said residual free oxygen with coke and carbon monoxide in said second bed, and decreasing the amount of nitrogen oxides in said regeneration gas by reacting at least a portion of said nitrogen oxides in said intermediate zone to form free nitrogen; and

(d) passing carbon monoxide-containing regeneration gas from said intermediate zone upwardly through a third fluidized bed comprising substantially coke-free catalyst in an upper zone in said regeneration vessel, and burning substantially all carbon monoxide introduced into said upper zone with additional free oxygen in contact with said third bed.

4,325,834

HETEROGENEOUS CATALYST SUPPORTS

Charles M. Bartish, Bethlehem, Pa., and Larry J. Hayes, Roanoke, Tex., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 21, 1980, Ser. No. 208,902
Int. Cl.[3] B01J *31/02, 31/12*
U.S. Cl. 252—429 R 8 Claims

1. A heterogeneous Group VI or VIII metal salt catalyst comprising mono-or bi-dentate ligands chemically attached to at least partially amorphous carbon and an effective proportion of a Group VI or VIII metal salt.

4,325,835

CATALYST COMPONENT

Angus J. Hartshorn, Runcorn, and Eric Jones, Kelsall, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 1, 1980, Ser. No. 164,932
Claims priority, application United Kingdom, Jan. 10, 1980, 00890/80; Jun. 6, 1980, 18581/80
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B 25 Claims

1. A catalyst component which is the product of reacting a particulate support material which has a reactive surface comprising a plurality of sites on the surface of the support which are capable of abstracting a magnesium hydrocarbyl from a solution thereof with

(a) at least one organomagnesium compound in which magnesium is directly bonded through a carbon atom to a first hydrocarbyl group and is bonded to a halogen, or oxyhydrocarbyl or a second hydrocarbyl group, the hydrocarbyl group or groups being alkyl, aryl, cycloalkyl, aralkyl, alkadienyl or alkenyl,

(b) at least one aluminum compound of the general formula: R_nAlY_{3-n} wherein R, each of which may be the same or different, represents a hydrocarbyl group which is an alkyl, aryl, cycloalkyl, aralkyl, alkenyl or alkadienyl group, n is 0, 1, 2, 3 or a fraction less than 3, and Y is a singly charged ligand which is hydride, fluoride, chloride, bromide, iodide or oxyhydrocarbyl,

(c) at least one organometallic compound of the general formula: $R_m^1MX_p$ wherein M is a metal of Groups IA, IIA, IIB, IIIB, IVA, VA or VIA of the Periodic Table, R^1 is a hydrocarbyl or a substituted hydrocarbyl group, X is a halogen, m is an integer up to the highest valency of the metal M and p is 0 or an integer up to 2 less than the valency of the metal M, except that when M is a metal from Group VIA, p is always 0, and when M is a metal from Groups IVA, VA or VIA m has a value from 2 to the highest valency of the metal and p has a value from 0 to a value of 2 less than the valency of the metal M, and

(d) at least one transition metal compound of Groups IVA, VA or VIA of the Periodic Table which is known to be useful in forming Ziegler-Natta catalysts, in which catalyst component the molar ratio of the aluminum compound to the organomagnesium compound is between 0.5 and 100, the molar ratio of the aluminum compound to the organometallic compound is between 1.0 and 100 and the molar ratio of the aluminum compound to the transition metal compound is between 1.0 and 2000, which reaction may be effected in any order or combination with the provisos that (i) the at least one organomagnesium compound or the at least one aluminum compound R_nAlY_{3-n} or the at least one organometallic compound $R_m^1MX_p$ or the at least one transition metal compound of Groups IVA, VA or VIA contains a halide group, (ii) where the organomagnesium compound or the at least one aluminum compound R_nAlY_{3-n} or the at least one organometallic compound $R_m^1MX_p$ is a Ziegler-Natta activator and the support is treated therewith after treatment with the at least one transition metal compound of Groups IVA, VA or VIA the support is treated with a pacifying agent which is capable of breaking metal-carbon or metal-hydrogen bonds in the catalyst component but does not have a deleterious effect on the catalyst component and which is used in sufficient quantity to break substantially all the metal-hydrocarbyl or metal-hydride bonds in the catalyst component, after treatment with the said activator and (iii) where the metal M in organometallic compound $R_m^1MX_p$ is magnesium, the organometallic compound $R_m^1MX_p$ and the organo-magnesium compound must not be added consecutively or together as a mixture, and that when the metal M in organometallic compound $R_m^1MX_p$ is aluminum, the organometallic compound $R_m^1MX_p$ and the aluminum compound R_nAlY_{3-n} must not be added consecutively or together as a mixture or complex.

4,325,836

NOVEL TITANIUM HALIDE CONTAINING CATALYST

Ronald A. Epstein, and Robert I. Mink, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 18, 1980, Ser. No. 170,262
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B 39 Claims

1. A catalyst system comprising:

(a) an organoaluminum containing component; and

(b) a titanium halide containing component obtained by:

(i) reacting a halogen containing magnesium compound with an organic phosphite to produce a reaction product;

(ii) co-pulverizing the reaction product with a complex of a titanium halide compound and an electron donor compound to produce a co-pulverized product; and

(iii) reacting the co-pulverized product with a titanium halide compound.

4,325,837

CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Charles E. Capshew; James N. Short; M. Bruce Welch, all of Bartlesville, Okla., and Richard E. Dietz, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 12, 1980, Ser. No. 177,313
Int. Cl.[3] C08F *4/64, 4/68*
U.S. Cl. 252—429 B 13 Claims

1. A method of preparing a catalyst for the polymerization of olefins, said method comprising:

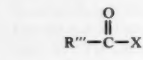
(A) preparing a first catalyst component by reacting in a suitable dry, essentially inert diluent reactants comprising

(1) a metal halide compound selected from the group consisting of metal dihalide compounds and metal hydroxyhalide compounds and the metal of the metal halide compound is selected from the group consisting of Group IIA metals and Group IIB metals of the Mendeleev Periodic Table; and

(2) a transition metal compound in which the transition

metal is selected from the group consisting of Group IVB and Group VB transition metals of the Mendeleev Periodic Table and the transition metal is bonded to at least one radical selected from the group consisting of hydrocarbyloxides, amides, imides, and mercaptides; and

(B) reacting a solution of said first catalyst component with a second catalyst component in the presence of an atmosphere of a polymerizable olefin monomer selected from the group consisting of aliphatic mono-1-olefins and conjugated dienes at a pressure in the range of about 1 to about 1,000 psia, wherein the molar ratio of the transition metal compound to the metal halide compound is in the range of about 10:1 to about 1:10, and wherein the concentration of the metal halide in said diluent is in the range of about 0.2 molar to about 1.2 molar, and wherein said second catalyst component comprises a precipitating agent selected from the group consisting of organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and hydrocarbyl aluminum halides; metal halides and oxyhalides of metals of Groups IIIA, IVA, IVB, VA, and VB; hydrogen halides; and organic acid halides selected from the group consisting of compounds having the formula



wherein R''' is an alkyl, aryl, or cycloalkyl group or combinations thereof and X is a halide, and

wherein said precipitating agent is combined with said solution of said first catalyst component in either an undiluted form or as an admixture with a suitable essentially inert diluent, the concentration of said precipitating agent in said diluent being at least 0.2 molar, further wherein said solution of said first catalyst component and said second catalyst component are added together during an addition time of less than about two hours, and then

(C) reacting the solid product resulting from step (B), which optionally has been reacted with a halide ion exchanging source selected from the group consisting of titanium tetrahalides, vanadium oxychloride, and zirconium tetrachloride, with a polymerizable olefin selected from aliphatic mono-1-olefins and conjugated dienes to produce a catalyst containing 1 to 50 weight percent prepolymer.

4,325,838

CATALYSTS FOR POLYMERIZATION OF OLEFINS

Hideyuki Tanaka; Yoshihisa Moriya; Kiyotaka Saito; Shozo Hori, and Yutaka Mitsuda, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 203,080

Claims priority, application Japan, Oct. 31, 1979, 54-139881

Int. Cl.[3] C08F *4/64, 4/02*

U.S. Cl. 252—429 B **12 Claims**

1. A catalytic component for polymerization of olefins prepared by intimately contacting magnesium halide as a substrate with at least one member selected from the group of halogen, magnesium halide and an interhalogen compound represented by the following formula, the halogen atoms of which are different from the halogen atom of magnesium halide as the substrate and further intimately contacting the resulting product with an electron donative compound and a halogen-containing titanium compound where halogen is directly attached to titanium:

$$XY_n$$

wherein X and Y are different halogen atoms and n is a number of 1, 3, 5 or 7.

4,325,839

IMPREGNATED SECOND VALENCE CHROMIUM COMPOUND IN SUPPORTED CATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1979, Ser. No. 106,350

Int. Cl.[3] C08F *4/78, 4/22, 4/16*

U.S. Cl. 252—430 **24 Claims**

1. A process for producing a catalyst having chromium present in both the hexavalent state and a lower valence state comprising forming a silica-containing support containing hexavalvent chromium, thereafter as a separate step anhydrously impregnating said support with a chromium component in an anhydrous solvent wherein the chromium has a valence of less than 6, and thereafter removing said solvent by gentle heating at a temperature of no more than about 100° C. and recovering said catalyst as the finished product of the process.

13. A process for producing a catalyst having chromium present in both the hexavalent state and a lower valence state consisting essentially of forming a dried silica-containing support containing a chromium compound wherein the chromium has a valence of less than 6, thereafter as a separate step anhydrously impregnating said support with a hexavalent chromium compound as a solution in an anhydrous solvent and thereafter removing said solvent by gentle heating at a temperature of not more than about 100° C.

24. A catalyst produced by the method of claim **13** wherein said lower valence state chromium in the finished product catalyst is a zerovalent chromium compound.

4,325,840

ORGANOMAGNESIUM COMPLEXES

Dennis B. Malpass, LaPorte, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Continuation of Ser. No. 915,083, Jun. 12, 1978, Pat. No. 4,231,896, which is a continuation of Ser. No. 697,085, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 570,685, Apr. 23, 1975, abandoned. This application Nov. 30, 1979, Ser. No. 99,225

Int. Cl.[3] B01J *31/12*

U.S. Cl. 252—431 R **13 Claims**

1. A hydrocarbon soluble organomagnesium complex having the formula

$$(R'_2Mg)_m\cdot(RM)_n$$

wherein RM is an organozinc compound selected from the group consisting of dialkylzincs, alkylzinc halides, or mixtures thereof, the alkyl portion of which R represents a primary, secondary or tertiary alkyl group, R' is selected from the group consisting of primary alkyl containing from 1 to 10 carbon atoms, and phenyl and mixtures thereof, and m and n are numbers such that the ratio of m/n is from 1 to 20.

4,325,841

NON-FREE-AMINE PROMOTER SYSTEM FOR POLYESTER COMPOSITION

Hilda Howell, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 61,379, Jul. 27, 1979, Pat. No. 4,267,279. This application Sep. 9, 1980, Ser. No. 185,499

Int. Cl.[3] B01J *31/12*

U.S. Cl. 252—431 C **6 Claims**

1. A non-free-amine type promoter system for promoting the polymerization of a free-radical catalyzed polyester composition, the promoter system comprising a first promoter and a second promoter, said first promoter provided by a salt-like reaction product of an amine and an aromatic dicarboxylic acid, said promoter system further characterized in providing a promoted curable polyester composition having a gel-time drift which is suppressed during the useable shelf-life of the

polyester composition as compared to a counterpart free-amine promoted polyester composition lacking said salt-like reaction product.

4,325,842

PROCESS FOR PREPARING A SUPPORTED MOLYBDENUM CARBIDE COMPOSITION

Lynn H. Slaugh, and Ronald J. Hoxmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,969
Int. Cl.[3] B01J *23/28, 27/22*
U.S. Cl. 252—443 7 Claims

1. A process for preparing a supported molybdenum carbide composition which comprises impregnating a porous, inert support with a solution of $(H_3O)_2Mo_6Cl_{14}.2H_2O$ dissolved in an organic solvent, heating the impregnated support under non-oxidizing conditions in order to remove the solvent and subsequently heating the impregnated support to a temperature ranging from about 650° C. to about 750° C. in a carbidng gas mixture which comprises hydrogen in a concentration ranging from about 1 to about 20 percent by volume, a carbiding component selected from the group consisting of lower alkane, lower alkene, carbon monoxide and mixtures thereof in a concentration ranging from about 0.5 to about 5 percent by volume and the balance being a noble gas.

4,325,843

PROCESS FOR PREPARING A SUPPORTED TUNGSTEN CARBIDE COMPOSITION

Lynn H. Slaugh, and Ronald J. Hoxmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,970
Int. Cl.[3] B01J *23/30, 27/22*
U.S. Cl. 252—443 6 Claims

1. A process for preparing a supported tungsten carbide composition which comprises:

(a) impregnating a porous oxidic support with a solution of a tungsten salt decomposable upon calcining to an oxide dissolved in a suitable solvent,

(b) drying the support to remove the solvent,

(c) calcining the impregnated support at a temperature ranging up to about 450° C. to about 750° C.,

(d) heating the support in an ammonia atmosphere at a temperature ranging from about 700° C. to about 800° C., and

(e) heating the resultant composition at a temperature ranging from about 700° C. to about 800° C. in a carbiding gas mixture which comprises hydrogen and a carbiding component selected from the group consisting of carbon monoxide methane, ethane, propane, ethylene, propylene, and mixtures thereof.

4,325,844

METHOD OF PREPARING DIATOMITE FOR RAPID CALCINATION

Bruce C. Olmsted, Jr., Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed May 20, 1980, Ser. No. 151,561
Int. Cl.[3] B01J *20/14*
U.S. Cl. 252—448 29 Claims

1. A process for the calcination of diatomite in which the time at temperature required to calcine a quantity of diatomite is reduced, which process comprises:

(a) mixing with said quantity of diatomite a quantity of water sufficient to produce a mixture comprising water and diatomite with a water content in the range of 15 to 50 weight percent moisture based on the total weight of materials;

(b) forming said moistened diatomite mixture into generally spherical balls; and

(c) calcining said balls at a temperature in the range of about 1700° F. to about 2350° F. for a period of from about 0.75 to about 30 minutes.

2. A process as in claim 1 wherein there is also a flux of whitening agent incorporated into said mixture balls prior to calcining of said balls.

26. A process as in claims 1, 2, 3 or 7 wherein there is also included in said mixture an organic binder.

4,325,845

ZEOLITE CATALYSTS AND METHOD OF PRODUCING THE SAME

John Lim, Anaheim, and Michael Brady, Studio City, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Nov. 9, 1979, Ser. No. 92,722
Int. Cl.[3] B01J *29/08*
U.S. Cl. 252—455 Z 13 Claims

1. A process of forming a catalyst containing a sodium zeolite of the faujasite type which comprises mixing in a water slurry, a zeolite of the faujasite type containing from about 12 to about 15% sodium expressed as Na_2O, clay and sodium silicate, the weight ratio of the zeolite to the silica equivalent to the sodium silicate being in the range of about 0.8 to about 1.2 parts by weight of the zeolite to one part by weight of the SiO_2 on a volatile free basis, drying the mixture and mixing the mixture with an ammonium salt solution at a pH of about 4 to 7 to form a silica gel in situ in the mixture and drying the treated mixture.

4,325,846

ADSORBENT MATERIALS FOR OILS AND FATS

Kozo Shibata, 72, Aza-Oka, Sasabe,Kawanish-City, Hyogo, Japan

Filed Jan. 30, 1980, Ser. No. 116,948
Int. Cl.[3] B01J *20/12*
U.S. Cl. 252—455 R 8 Claims

1. A porous adsorbent material for oils and fats which consists of a sintered product produced by admixing with water a mixture composed of about 65–35 parts by weight of silica, and about 35 to 65 parts by weight of clay at such a proportion as the total is 100 parts by weight and pore-forming material capable of being burnt off at a temperature of not more than a sintering temperature for silica and clay, the water being 300–450 parts by weight, thereby making a mud-formed mixture, molding the mud-formed mixture to a desired-shape, drying the molded shape, sintering the dried shape at the sintering temperature, whereby continuous open pores are formed, and treating the sintered product with a silicone-based water repellent agent.

4. A porous adsorbent material in accordance with claim 1 wherein sawdust is utilized as a pore-forming material.

4,325,847

USE OF ADDITIONAL ALUMINA FOR EXTRA ZEOLITE STABILITY IN FCC CATALYST

John C. Lim, Anaheim; Adrian P. Humphries, Claremont, and Dennis M. Stamires, Newport Beach, all of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jun. 19, 1980, Ser. No. 160,851
Int. Cl.[3] B01J *29/08*
U.S. Cl. 252—455 Z 10 Claims

1. A method of forming a catalyst which comprises mixing a sodium containing zeolite with an anionic aluminum source in water at a pH substantially above 7, adding an acidic compound and reducing the pH to substantially less than 7 and forming alumina hydrate gel in said water-zeolite mixture adding pseudoboehmite and clay to said water mixture to form a slurry and spray drying said slurry.

2. A method of forming a catalyst which comprises mixing a sodium containing zeolite with an anionic aluminum source in water at a pH substantially above 7, adding an acid or an acidic salt and exchanging the sodium with a cation of said acidic compound, and reducing the pH to substantially less than 7 and forming alumina hydrate gel in said water-zeolite mixture

adding pseudoboehmite and clay to said water mixture to form a slurry and spray dring said slurry.

4,325,848

CELLULOSE-BASED ELECTRIC INSULATION MATERIAL CONTAINING BORIC ANHYDRIDE AND PROCESS FOR PRODUCING SAME

Lev N. Tkach, ulitsa Griboedova, 8; Jury N. Prikhodko, ulitsa Klubnaya, 12a, both of Malin Zhitomirskoi oblasti; Leonid M. Vaisman, ulitsa Entuziastov, 47, kv. 37, Kiev; Vladimir I. Soldatenko, ulitsa Klubnaya, 12, and Vasily V. Kostjuchenko, ulitsa Klubnaya, 2, kv. 5, both of Malin Zhitomirskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 28,305, Apr. 9, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,926

Claims priority, application U.S.S.R., Oct. 26, 1978, 2674052; Oct. 26, 1978, 2674053

Int. Cl.[3] D21C *3/04;* **D21H** *3/68;* **H01B** *3/52*

U.S. Cl. 252—567 **8 Claims**

1. A process for producing cellulose-based electric insulation paper, which comprises preparing a cellulose-based paper pulp, casting said paper pulp into a paper sheet, and pressing and drying said paper sheet, wherein at least one of said paper pulp or paper sheet is treated with a chemical reagent selected from the group consisting of boric acid, a boron compound forming boric acid when reacted with water, and a mixture thereof, said reagent being added in an amount such that the boron content in the desired paper is 0.02 to 1.1% by weight with respect to the absolutely dry paper.

4,325,849

METHOD FOR MAKING A SLURRY CONTAINING PARTICULATE MATTER AND FIBERS FOR A PREFORMED INSULATION PRODUCT

Murray Rosen; Alan R. Koenig, both of St. Petersburg, and John D. Copham, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 7,101, Jan. 29, 1979, Pat. No. 4,242,241, which is a division of Ser. No. 847,165, Oct. 31, 1977, Pat. No. 4,168,919. This application Aug. 8, 1980, Ser. No. 176,449

Int. Cl.[3] C04B *43/00*

U.S. Cl. 252—62 **3 Claims**

1. A method for making a slurry containing particulate matter, binder and fibers for a preformed insulation product comprising making a liquid binder, putting in chopped strands of fibers into said liquid binder, agitating said liquid binder to separate at least some of said strands into individual fibers, forcing said liquid binder and fibers under pressure through a hollow tubular member against an inwardly closing helical vane to form a conically expanding spray of binder and fibers breaking up any remaining strands of fibers into individual fibers, forming a falling curtain of separated particulate matter and directing said conically expanding spray of binder and fibers against said falling curtain of separated particulate matter to form a uniform slurry of particles, binder and fibers.

4,325,850

PROCESSING AND PRODUCT ENHANCEMENT ADDITIVES FOR POLYOLEFIN FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 21, 1979, Ser. No. 40,793

Int. Cl.[3] C08L *23/00, 23/06, 23/16*

U.S. Cl. 524—228 **9 Claims**

1. A polyolefin, thermoplastic packaging film having an improved combination of slip, block, and optical properties comprising:

(a) 500 to 5,000 ppm by weight of a particulate antiblock agent selected from the group consisting of: colloidal silica, diatomaceous earth, clays, aluminum oxide, calcium oxide, magnesium oxide, barium oxide, titanium dioxide, iron oxide, zinc oxide, tin oxide, calcium carbonate, magnesium carbonate, mica, asbestos, calcium silicate, molybdenum disulfide, and zinc sulfide;

(b) 500 to 8000 ppm by weight of a bisamide wax as a slip agent; and

(c)250 to 40,000 ppm by weight of a plasticizing oil selected from the group consisting of dibutyl sebacate, di-isododecyl phthalate, zinc stearate, stearic acid, polyethylene glycol monostearate, polyethylene glycol distearate, epoxidized vegetable oil, tricresyl phosphate, petroleum oil, parafin oil, tail oil, linseed oil, and liquid petrolatum.

(d) the coefficient of friction of said film being substantially less than said film containing only said antiblock and slip agents alone or in combination.

4,325,851

WATER-ACTIVATABLE HOT-MELT ADHESIVES

Herman Colon, 2, Sobrisco St., Monsey, N.Y. 10952, and Albert Maletsky, 732 Iron Latch Rd., Franklin Lakes, N.J. 07417

Filed Oct. 24, 1980, Ser. No. 200,392

Int. Cl.[3] C08K *5/09*

U.S. Cl. 524—83 **8 Claims**

1. Water-activatable, hot-melt, applied adhesive compositions comprising:

(a) 30 to 70 wt% of polymers comprising 30 to 60 wt% of a water-sensitive vinyl pyrrolidone/vinyl acetate copolymer wherein the weight ratio of the vinyl pyrrolidone moiety to the vinyl acetate moiety ranges from between about 3:1 to 1:3 and 0 to 25 wt% of an ethylene/vinyl acetate copolymer containing from about 17 to 40 wt% of vinyl acetate;

(b) 5 to 12 wt% of at least one free monobasic, saturated, long-chain, fatty acid having chain-lengths preponderantly of about 16 to 20 carbon atoms, said fatty acid having an acid number greater than about 160; and

(c) 0 to 30 wt% of at least one wax selected from the group consisting of solid water-soluble polyethylene glycol waxes and water-insoluable ester waxes.

4,325,852

INSIDE TIRE PAINT

Victor L. Hallenbeck, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 31, 1980, Ser. No. 136,007

Int. Cl.[3] C08L *91/00*

U.S. Cl. 523—334 **4 Claims**

1. A method of producing an inside green tire paint which is substantially free of silicone and hydrocarbon solvents, said method comprising (a) heating more than one wax to a temperature above the melting point of the highest melting point wax, (b) adding an amine and a fatty acid to the molten wax, (c) adding a surfactant to the molten wax, (d) adding water which has been preheated to a temperature greater than the melting point of the highest melting point wax, (e) agitating the mixture while cooling to a temperature below the melting point temperature of the lowest melting point wax to form a wax dispersion, (f) blending a rubber latex, water and surfactant with said wax dispersion, and (g) adding a pigment capable of functioning as an air bleeding agent.

4,325,853

HOT MELT ADHESIVE COMPOSITIONS CONTAINING ROSIN ESTERS

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,389

Int. Cl.[3] C08L *93/04;* **C08F** *218/08*

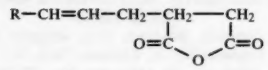
U.S. Cl. 524—272 **9 Claims**

1. A hot melt adhesive composition consisting essentially of:

(a) 10-30 weight % of an alkenyl succinic anhydride,

(b) 20-60 weight % of an ethylene copolymer, and

(c) 10–40 weight % of a tackifying resin;
said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a rosin ester having a Ring and Ball softening temperature of about 65°–140° C. and formed by esterifying a rosin acid with a di-, tri-, or tetra-hydroxy aliphatic alcohol.

4,325,854

SOLVENT SOLUTIONS OF CHEMICALLY MODIFIED ASPHALTS

Michael G. Roberts, and Joseph F. Tanner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1981, Ser. No. 249,593
Int. Cl.[3] C08L *95/00*
U.S. Cl. 524—476 **9 Claims**

1. A homogeneous, stable solution of the reaction product of asphalt, a vinyl aromatic monomer, and a rubbery polymer in an organic solvent, said solvent being selected from the group consisting of (a) toluene, (b) a mixture of toluene and xylene having a minimum of about 25% by weight toluene and a maximum of about 75% by weight xylene (c) a mixture of toluene and Stoddard solvent having a minimum of about 40% toluene and a maximum of about 60% Stoddard solvent, (d) a mixture of toluene, xylene and at least a compound selected from the group consisting of heptane and hexane said mixture having a minimum amount of 25% toluene, a maximum of about 55% xylene and a maximum of about 20% of heptane or hexane or a mixture thereof, (e) a mixture of toluene, Stoddard solvent and heptane or hexane, or a mixture of heptane or hexane, the maximum amount of heptane or hexane, or a mixture of heptane or hexane, being about 25%, the minimum amount of toluene being about 40% and the maximum amount of Stoddard solvent being about 35%.

4,325,855

ADHESIVES

Heinz H. Dickmann, Bühl; Dieter Hechenberger, Sinsheim-Eschelbach, and Richard Krattner, Bühl-Neusatz, all of Fed. Rep. of Germany, assignors to Lingner and Fischer GmbH, Fed. Rep. of Germany

Filed May 24, 1976, Ser. No. 688,959
Claims priority, application United Kingdom, Sep. 10, 1975, 37212/75
Int. Cl.[3] C08L *1/28, 29/04, 29/12, 33/24*
U.S. Cl. 524—219 **6 Claims**

1. An adhesive composition according to claim 1 which consists essentially of polyvinylpyrrolidone in the amount of 20% by weight, glycerine in the amount of 10% by weight, sodium-N-hexylterephthalic acid amide in the amount of 5% by weight, sodium chloride in the amount of 7.5% by weight and water in the amount of 57.5% by weight.

4,325,856

SEQUENTIAL EMULSION POLYMERIZATION PROCESS

Tadayoshi Ishikawa, Ayase, Japan, and Do I. Lee, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1980, Ser. No. 108,973
Int. Cl.[3] C08F *2/24*
U.S. Cl. 523—201 **11 Claims**

1. A process for preparing an aqueous copolymer latex of colloidally dispersed, substantially spheroidal, heterogeneous copolymer particles which are individually composed of a relatively hydrophobic polymer core portion having a relatively hydrophilic, polymeric portion preferentially oriented toward the outer surface thereof, said process comprising the steps of:

(a) first preparing an initial aqueous latex of a substantially linear hydrophilic polymer by emulsion copolymerizing at a pH of from about 2 to about 6 in the substantial absence of a cross-linking agent an initial monomer charge comprising (1) one or more vinyl esters of a non-addition polymerizable carboxylic acid and/or one or more esters of an addition polymerizable carboxylic acid and (2) one or more relatively hydrophilic comonomers in an amount which renders the copolymer of said initial latex sufficiently hydrophilic that it ultimately becomes preferentially oriented toward the outer surface of the finished copolymer particles of the final copolymer latex product, said relatively hydrophilic comonomer having a solubility in water of at least about 3 weight percent on a total weight basis at 25° C. and with the proviso that such hydrophilic comonomer can be excluded when the monomer component of step (a)(1) is exclusively vinyl acetate; and

(b) thereafter emulsion polymerizing, in the presence of from about 5 to about 50 parts by weight on a polymer solids basis of the initial hydrophilic polymer latex of step (a) and at a pH of from about 2 to about 6, from about 50 to about 95 parts by weight of a second monomer charge comprising (1) an aliphatic conjugated diene and/or an addition polymerizable monovinylidene monomer selected from the group consisting of monovinylidene aromatic monomers and vinylidene halide monomers and (2) from 0 to about 10 weight percent based upon the weight of such second monomer charge of a monoethylenically unsaturated carboxylic acid monomer.

4,325,857

DURABLE ANTISOLING COATINGS FOR TEXTILE FILAMENTS

Nitin J. Champaneria, Seaford, Del.; Lee R. Harper, Media, Pa., and Edward A. Hosegood, Ocean City, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 13, 1980, Ser. No. 149,334
Int. Cl.[3] C08L *63/00*
U.S. Cl. 523—412 **6 Claims**

1. A durable antisoiling coating composition for textile filaments comprising an aqueous dispersion of (1) a perfluoroalkylester of a citric acid urethane and a fluorinated alcohol having the formula $C_nF_{2n+1}(CH_2)_mOH$ wherein n is 6 to 14 and m is 2 and of (2) the reaction product of

(A) not less than 50% by weight, based on the weight of (A) plus (B), of an eoxy resin containing, on the average, two terminal 1,2-epoxy groups per molecule and having an epoxy equivalent weight of 750–5000;

(B) a caboxyl-functional polymer in an amount sufficient to provide at least 1.25 equivalents of carboxyl groups, when the source of the carboxyl group is a mono-protic acid, and at least 2.0 equivalents of carboxyl groups, when the source of such groups is a diprotic acid, per equivalent of 1,2-epoxy groups in the epoxy resin, said polymer having a weight average molecular weight (determined by light

scattering) of about 10000–160000 and an acid number of 100–500;

(C) an aqueous solution of at least 1.25 equivalents of a tertiary amine per equivalent of 1,2-epoxy groups in the epoxy resin, said tertiary amine being selected from the group consisting of $R_1R_2R_3N$, pyridine, N-methylpyrrole, N-methyl piperidine, N-methyl pyrrolidine, N-methyl morpholine, and mixtures thereof and wherein R_1 and R_2 are substituted or unsubstituted monovalent alkyl groups containing one or two carbon atoms in the alkyl portion and R_3 is a substituted or unsubstituted monovalent alkyl group containing 1–4 carbon atoms; and

(D) optionally, 10–90% of the amount required for stoichiometric reaction with the carboxy-functional polymer of (B) of at least one primary, secondary or tertiary amine or monofunctional quaternary ammonium hydroxide;

wherein Y is at least about $6+0.75(2^X)$ wherein Y is the milliequivalent of carboxyl groups neutralized with primary, secondary or tertiary amine or mono-functional quaternary ammonium hydroxide per 100 grams of acid polymer plus epoxy, and X is the epoxy equivalent weight divided by 1000; and

wherein for increasing ratios of carboxyl groups to 1,2-epoxy groups, the amount of amine is increased to keep the carboxyl-functional polymer water dispersible;

with said ester being present in said dispersion in a ratio in parts by weight to said reaction product within the range of about 1:1 to 12:1.

4,325,858

AQUEOUS DISPERSION TYPE COATING COMPOSITIONS WITH AN IMPROVED VIBRATION-DAMPING CHARACTERISTIC

Koichi Saito, and Osamu Ohara, both of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Aug. 15, 1980, Ser. No. 178,592

Claims priority, application Japan, Jun. 16, 1979, 54-104718

Int. Cl.³ C08L *23/06*

U.S. Cl. 524—524 **1 Claim**

1. An aqueous dispersion type vibration-damping composition comprising, as essential components thereof, (a) a vinyl acetate polymer emulsion, (b) an ethylene polymer in finely divided particulate or emulsion state, (c) a flaky inorganic filler, and (d) ammonium zirconylcarbonate as a cross-linking agent for said vinyl acetate polymer emulsion.

4,325,859

PROCESS FOR THE PRODUCTION OF ORGANIC POLYMER POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 191,375, Sep. 29, 1980, Pat. No. 4,282,129, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908. This application Jul. 20, 1981, Ser. No. 284,597

Int. Cl.³ C08L *83/02*

U.S. Cl. 524—96 **13 Claims**

1. The process for the production of a stable organic-polymer-polyol-alkali metal silicate emulsion by mixing the following components:

(a) Aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) Polyol, 25 parts by weight;

(c) Organic acid, 1% to 5% by weight, percentage based on weight of alkali metal silicate solution;

(d) An organic polymer in a fluid state.

4,325,860

POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH AROMATIC SULFONES OR AROMATIC SULFOXIDES

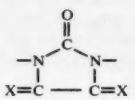
Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 28, 1981, Ser. No. 229,241

Int. Cl.³ C08K *5/36*

U.S. Cl. 324—155 **33 Claims**

1. A plasticized composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=O or NH, provided at least one X is O and a plasticizing amount of aromatic sulfone or aromatic sulfoxide.

4,325,861

RAPIDLY DISSOLVED WATER-SOLUBLE POLYMER COMPOSITION

David B. Braun, Ridgefield, Conn., and Meyer R. Rosen, Spring Valley, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 856,980, Dec. 2, 1977, abandoned. This application Apr. 3, 1980, Ser. No. 136,762

Int. Cl.³ C08K *5/01*

U.S. Cl. 523—205 **29 Claims**

1. A stable nonaqueous composition adapted to provide, upon dilution with water, a solution containing a high molecular weight water-soluble polymer, comprising:

(a) a particulate water-soluble polymer selected from the group consisting of poly(ethylene oxide), cellulose derivatives and mixtures thereof having an average size of from about 50 to about 250 microns,

(b) a water-insoluble, organic liquid vehicle which is nonsolvent for said particulate polymer in sufficient amounts to coat said particulate polymer,

(c) an inert, nonionic surfactant agent compatible with said organic vehicle in sufficient amounts to remove said organic liquid vehicle coating on said particulate polymer upon dilution with water, and

(d) an inert thickener agent in amounts from about 0.1 to about 5% by weight of said composition to retard stratification of said composition when fluidized.

4,325,862

SOLID PIGMENT COMPOSITIONS CONTAINING C_4-C_6 METHACRYLATE-AMINO ACRYLATE COPOLYMERS

Johann Schuster, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

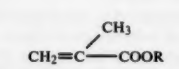
Filed Jun. 2, 1980, Ser. No. 155,766

Claims priority, application Switzerland, Jun. 5, 1979, 5208/79

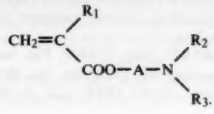
Int. Cl.³ C08J *3/20*; C08L *33/06*; C09B *67/00*; C09C *3/10*

U.S. Cl. 524—87 **26 Claims**

1. A solid pigment composition comprising an intimate mixture of a pigment and a preformed copolymer of a compound of formula I

 I

in which R is C_{4-6}alkyl or C_{4-6}cycloalkyl, a lesser amount of a compound of formula II



II

in which

R_1 is hydrogen or methyl,

R_2 is hydrogen or C_{1-6} alkyl

R_3 is C_{1-6}alkyl

or R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocyclic 5- or 6-membered ring which may contain an oxygen or a further nitrogen atom

and A is a straight or branched chain C_{2-6} alkylene group, and 0 to 10%, by weight, of comonomer other than compounds of formulae I and II.

4,325,863

BENZOFURANONE OR INDOLINONE COMPOUNDS USEFUL AS STABILIZERS FOR ORGANIC MATERIALS

Hans Hinsken, Kandern, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil; Wolfgang Mueller, Allschwil, both of Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

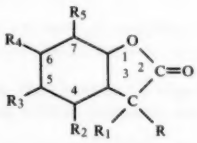
Filed Feb. 4, 1980, Ser. No. 118,054

Claims priority, application Switzerland, Sep. 5, 1979, 1104/79; Sep. 28, 1979, 8793/79

Int. Cl.[3] **C08K** *5/15, 5/34*

U.S. Cl. 624—111 **24 Claims**

1. A process for stabilizing organic polymeric materials comprising incorporating therein a stabilizing amount of a compound of formula Ic,

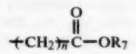


Ic

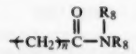
in which either

R is hydrogen, and

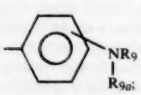
R_1 hydrogen; C_{1-22} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl; phenyl substituted by one to three substituents selected from the group consisting of C_{1-12}—alkyl, hydroxy, C_{1-12} alkoxy, C_{1-18}—acyloxy, chloro or nitro, with the provisos that: (1) when the phenyl ring contains more than one C_{1-12} alkyl group, said alkyl groups contain a maximum of 18 carbon atoms, (2) the maximum number of hydroxy substituents is two, and (3) the maximum number of each of the substituents selected from C_{1-12} alkoxy, C_{1-18} acyloxy, chloro and nitro is one; or a group of formula (a/4), (a/5) or (a/6)



(a/4)



(a/5)



(a/6)

or R and R_1 together form a group (a/2)

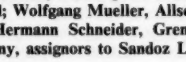
(a/2)

either

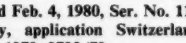
each of R_2 to R_5, independently, is hydrogen; C_{1-12} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; C_{1-22} alkoxy; phenoxy; phenoxy substituted by one or two C_{1-12} alkyl groups,

said alkyl groups having a maximum of 16 carbon atoms; C_{1-18} acyloxy; chloro; phenyl-C_{1-9} alkyl; phenylthio; phenyl-C_{1-9} alkyl or phenylthio substituted on the phenyl ring by one to three substituents selected from C_{1-12} alkyl, hydroxy and $R_{15}CO—O—$; phenyl; phenyl substituted by one or two C_{1-12} alkyl groups, said alkyl groups having a maximum of 16 carbon atoms; nitro; 2-furanylcarbonyloxy; 2-thienylcarbonyloxy; a group of formula (b/2), (b/3) or (b/4)

(b/2)



(b/3)



(b/4)

a group of formula (a/4) or (a/5) as defined above;

with the provisos that:

(a) a maximum of two of R_2 through R_5 is C_5 or C_6 cycloalkyl, C_{1-5} alkyl-C_5 or C_6 cycloalkyl, C_{1-22} alkoxy, phenoxy, substituted phenoxy, C_{1-18} acyloxy or chloro; and

(b) a maximum of one of R_2 through R_5 is optionally substituted phenyl, phenyl-C_{1-9} alkyl or phenylthio, nitro, 2-furanylcarbonyloxy, 2-thienylcarbonyloxy or a group of formula (b/2), (b/3), (b/4), (a/4) or (a/5), provided that only the R_3 substituent can be a group of formula (b/3) or (b/4) and only the R_3 or R_5 substituent can be a group of formula (a/5);

or R_2 and R_3, together, form a condensed benzene ring,

or R_3 and R_4, together, form a furan(2) one ring in which the 3-position bears the substituents R and R_1 as defined above,

or R_4 and R_5, together, form tetramethylene or a furan(2) one ring in which the 3-position bears the substituents R and R_1 as defined above,

and one of the two remaining substituents is hydrogen and the other is any one of the significances given for R_2 to R_5 above;

either

R_6 is C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; benzyl; $(C_6H_5)_2CH$; phenyl; phenyl mono- or disubstituted by C_{1-12} alkyl, provided that when the phenyl ring contains more than one C_{1-12} alkyl group, said alkyl groups contain a maximum of 16 carbon atoms; phenyl monosubstituted by hydroxy; phenyl mono- or disubstituted by methoxy; phenyl monosubstituted by chloro; phenyl monosubstituted by dimethylamino; 3,5-ditertiary butyl-4-hydroxyphenyl; β-naphthyl; pyridinyl; 2-furyl; or a group of formula (c/1) or (c/2)

(c/1)

(c/2)

R_{6a} is hydrogen; C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl or benzyl;

or

R_6 and R_{6a}, together with the carbon atom to which they are bound, form an unsubstituted 5- or 6-membered aliphatic ring or a 5- or 6-membered aliphatic ring monosubstituted by C_{1-4} alkyl;

each

R_7, independently, is hydrogen; C_{1-18} alkyl; alkyl-O-alkylene having a maximum of 18 carbon atoms; alkyl-S-alkylene having a maximum of 18 carbon atoms; di-C_{1-4} alkylamino-C_{1-8} alkyl; C_{5-7} cycloalkyl; phenyl; or phenyl substituted by one to three C_{1-12} alkyl groups, said alkyl groups having a maximum of 18 carbon atoms;

either

each R_8, independently, is hydrogen; C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl; phenyl substituted by one or two C_{1-12} alkyl groups, said alkyl groups having a maximum of 16 carbon atoms; or a group of formula (d/1), (d/2) or (d/3)

$$-CH_2CH_2OH \qquad (d/1)$$

$$-CH_2CH_2OC_{1-18}\text{alkyl} \qquad (d/2)$$

$$-CH_2CH_2-O-\overset{\overset{O}{\|}}{C}-R_{11}; \qquad (d/3)$$

or both

R_8's, together with the nitrogen atom, form an unsubstituted piperidine or morpholine ring;

R_9 has one of the significances of R_8;

R_{9a} is hydrogen; C_{1-18} alkyl; or a group of formula (d/1), (d/2) or (d/3) as defined above;

R_{11} is hydrogen; C_{1-22} alkyl; C_{5-7} cycloalkyl; phenyl; phenyl-C_{1-6} alkyl; or phenyl or phenyl-C_{1-6} alkyl substituted on the phenyl ring by one or two C_{1-12}-alkyl groups, said alkyl groups having a maximum of 16 carbon atoms;

R_{12} is C_{1-18} alkyl; 2-hydroxyethyl; phenyl; or C_{1-9} alkyl-phenyl;

R_{15} is C_{1-22} alkyl or phenyl;

and n is 0, 1 or 2.

4,325,864

PYRROLIDINE-RING-CONTAINING COMPOSITIONS FOR USE AS ANTI-UV STABILIZERS IN PLASTICS MATERIALS

Silvestro Costanzi, San Giuliano Milanese; Francesco Tessarolo, Monza, and Adriano Ballabio, Giussano, all of Italy, assignors to ANIC S.p.A., Palermo, Italy

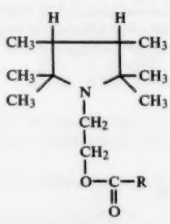
Filed Dec. 5, 1980, Ser. No. 213,653

Claims priority, application Italy, Feb. 19, 1980, 20001 A/80

Int. Cl.[3] **C08K** *5/00;* **C07D** *207/08*

U.S. Cl. 524—104 **5 Claims**

1. A compound of the formula:



wherein R is the radical C_nH_{2n+1}, n having a value from 4 to 17.

4,325,865

FLAME RETARDANT RESIN COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 487,959, Nov. 2, 1977, Pat. No. 4,205,142. This application Dec. 10, 1979, Ser. No. 102,189

Int. Cl.[3] **C08L** *77/00;* **C08K** *3/22, 3/38*

U.S. Cl. 523—205 **18 Claims**

1. A resin composition comprising:

A. a thermoplastic polyamide;

B. an effective amount of a halogenated flame retardant additive; and

C. an effective amount of a flame retardant synergist of average particle size less than about 2 microns, wherein the particles of the synergist are substantially occluded with a non-blocking rubber.

4,325,866

PROTEIN, PP_{11}, A PROCESS FOR ITS PREPARATION AND ITS USE

Hans Bohn, Marburg an der Lahn, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,184

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946458

Int. Cl.[3] **A61K** *39/395;* **C07G** *7/00*

U.S. Cl. 260—112 B **5 Claims**

1. A protein, PP_{11}, extracted from placental tissue, having

(a) a carboydrate content of 3.9±0.9%, consisting of 2.6±0.5% of hexoses, 1.0±0.3% of hexosamines, 0.05±0.03% of fucose and 0.26±0.07% of neuraminic acid;

(b) a sedimentation coefficient $S_{20,w}{}^0$ of 3.5±0.2 S

(c) a molecular weight of 44,300±6,000, determined in an ultracentrifuge;

(d) a molecular weight of 62,000±3,000, determined in polyacrylamide gel containing sodium dodecyl-sulfate (SDS);

(e) an extinction coefficient $E_{1\ cm}{}^{1\%}$ (280 nm) of 13.4±1.0, and

(f) an electrophoretic mobility similar to that of the α_1-globulins.

4,325,867

PROCESS FOR THE RECOVERY OF α-2-SB-GLYCOPROTEIN

Walter Eberle, Bernried, and Winfried Albert, Pähl, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,759

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949407

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 B **12 Claims**

1. Process for obtaining alpha-2-SB-glycoprotein from physiological solutions thereof, which process comprises binding the alpha-2-SB-glycoprotein to a bindable protein immobilized on an insoluble carrier, washing the carrier-bound protein with a buffer solution of pH 6 to 8.5, and eluting the alpha-2-SB-glycoprotein with a buffer solution of pH 9 or more, and isolating same from the eluate.

4,325,868

PROCESS FOR PRODUCING A PROTEINACEOUS MATERIAL HAVING A HIGH WATER HOLDING CAPACITY AND THE MATERIAL PRODUCED THEREBY

Charles R. T. Brown, Oakley, and Peter Harris, Bolnhurst, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,212
Claims priority, application United Kingdom, Feb. 28, 1980, 06807/80
Int. Cl.³ A23J 1/14
U.S. Cl. 260—123.5 14 Claims

1. A process for producing a proteinaceous material having a high water-holding capacity comprising the steps of:

(a) treating a defatted meal originating from oil-bearing seeds with an aqueous solution having a pH in the range of from 6.0 to 9.0 for a period of time sufficient to solubilise at least a portion of the protein present in the meal;

(b) lowering the pH of the product of step (a) to a value in the range of from 2.0 to 3.0 and maintaining the said pH within said range until a substantial portion of the said protein is dissociated into a variety of subunits;

(c) heating the product of step (b) at a temperature in the range of from 80° to 100° C. so as to aggregate said subunits and obtain a protein-containing material which is insoluble in water;

(d) bringing the pH of the product of step (c) to fall within the range of from 6.0 to 8.0; and

(e) subjecting the product of step (d) to ultra-filtration on a membrane having a cut-off limit such that the proteinaceous material is retained whilst salts and low molecular sugars permeate.

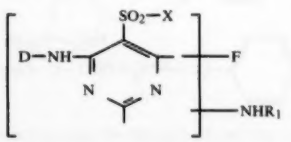
4,325,869

NOVEL DYES, THEIR PREPARATION AND USE

Karl Seitz, Oberwil; Henri Riat, Arlesheim, and Karl Hoegerle, Basle, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 903,632, May 8, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,979
Claims priority, application Luxembourg, May 9, 1977, 77286
Int. Cl.³ C09B 45/00
U.S. Cl. 260—146 D 4 Claims

1. A dye of the formula



in which D is a radical of a monoazo or polyazo dye, X is alkyl or alkenyl which may be substituted by halogen, alkoxy or aryl and R_1 is hydrogen, alkyl which may be substituted by hydroxy, alkoxy chloro, phenyl, sulfato or sulfo, cyclohexyl, phenyl which may be substituted by alkyl, alkoxy, chloro, hydroxy, nitro, carboxy, acetylamino, ureido, sulfomethyl or sulfo, or naphthyl which may be substituted by hydroxy or sulfo.

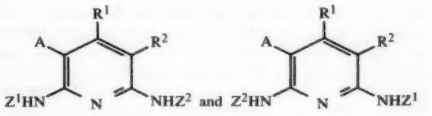
4,325,870

PROCESS FOR THE PREPARATION OF 2,6-DIAMINOPYRIDINE-AZO DYESTUFFS AND OF THEIR PRECURSORS

Ulrich Bühler, Schöneck, and Ernst Heinrich, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,814
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916319
Int. Cl.³ C09B 29/42; C07D 213/74
U.S. Cl. 260—156 7 Claims

1. In the process for preparation of 2,6-diaminopyridines of the formula



wherein

A is hydrogen or —N=N—D;

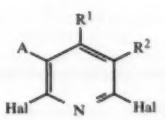
R^1 is H, alkyl having 1 to 8 carbon atoms, phenyl or phenyl substituted by halogen, alkyl having 1 to 8 carbon atoms or alkyl having 1 to 8 carbon atoms;

R^2 is H, cyano, nitro, alkanoyl having 2 to 4 carbon atoms or methylsulphonyl;

Z_1 and Z_2 are identical or different and each is H, alkyl having 1 to 8 carbon atoms, polyalkoxyalkyl having 1 to 8 carbon atoms, cycloalkyl having 5 to 7 carbon atoms, alkenyl having 3 to 5 carbon atoms, or phenyl, said alkyl and polyalkoxyalkyl being unsubstituted or substituted by hydroxyl, alkoxy having 1 to 4 carbon atoms, alkenyloxy having 3 to 5 carbon atoms, cycloalkyloxy having 5 to 7 carbon atoms, phenoxy, phenylalkoxy, alkanoyloxy having 1 to 4 carbon atoms, cyano, amino, alkylamino or dialkyl amino having 2 to 8 carbon atoms and said phenyl being unsubstituted or substituted by alkyl having 1 to 4 carbon atoms, halogen or hydroxyethoxy; and

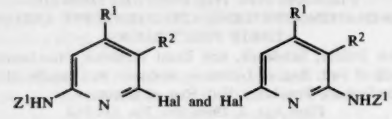
D is a customary diazo coupled moiety of the benzene, azobenzene, benzophenone, diphenyl sulphone, thiazole, isothiazole, benzthiazole, benzisothiazole or thiadiazole series;

said process comprising reacting a 2,6-dihalopyridine of the formula

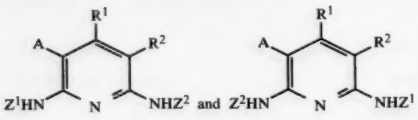


wherein Hal is chlorine or bromine, with a primary amine and when A is —N=ND subsequently coupling the product with a diazonium compound,

wherein the improvement comprises reacting the 2,6-dihalopyridine with 1 to 1.1 times the molar amount of an amine of the formula Z^1NH_2 in a two-phase system of water and an organic solvent which is insoluble in water or soluble in water only to a limited extent and which is inert under the reaction conditions, in the presence of 1 to 1.2 times the molar amount of an inorganic base, at a temperature between 25° and 150° C. and at a pH of 8 to 13, to produce compounds of the formula



and then, after completely separating off the aqueous phase, the resulting mixture is reacted with 1 to 1.1 times the molar amount of an amine of the formula Z^2NH_2 in the same organic solvent, at temperatures between 80° and 180° C., in the presence of 1 to 1.5 times the molar amount of an inorganic base, to produce 2,6-diaminopyridine compounds of the formula



where A is H; and when A is —N=ND, adding an aqueous mineral acid to the reaction mixture to adjust the mixture pH to 1 to 6 and then coupling the 2,6-diaminopyridines with a diazonium compound of the formula

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4,325,871

ORTHO-BIS (2-SUBSTITUTED AZOSTYRYL) BENZENE COMPOUNDS

Masaomi Sasaki, Shizuoka; Mitsuru Hashimoto, Numazu, and Tomiko Kawakami, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

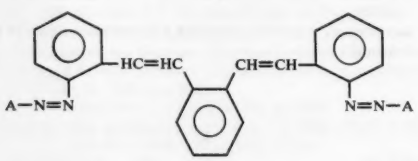
Filed Jun. 11, 1980, Ser. No. 158,461

Claims priority, application Japan, Jun. 20, 1979, 54-76715

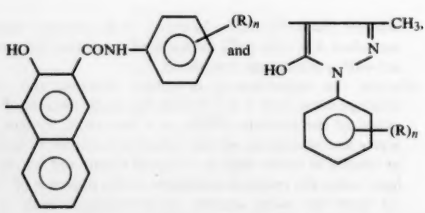
Int. Cl.³ C09B *35/03, 35/033, 35/215;* **G03G** *5/04*

U.S. Cl. 260—160 **14 Claims**

1. A bis-azo compound of the formula



in which A represents identical subsituents selected from the group consisting of



wherein R represents alkyl, alkoxy, nitro, dialkylamino or halogen, and n represents an integer 0, 1, 2 or 3 and when n is 2 or 3, R represents identical or different substituents selected from the group consisting of alkyl, alkoxy, nitro, dialkylamino and halogen.

4,325,872

PROCESS FOR THE PREPARATION OF A 2-PYRROLIDONE

Peter J. N. Meyer, Munstergeleen, and Johannes G. M. Nieuwkamp, Limbricht, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 22, 1980, Ser. No. 218,465

Claims priority, application Netherlands, Dec. 21, 1979, 7909230

Int. Cl.³ C07D *207/267*

U.S. Cl. 260—326.5 FN **5 Claims**

1. In processes for the preparation of 2-pyrrolidone from succinonitrile and substituted succinonitriles carrying an alkyl group of from 1 to 4 carbon atoms by hydrogenating said succinonitrile in the presence of ammonia in the liquid phase with a fixed-bed hydrogenation catalyst and treating the hydrogenation product with water, the improvement which consists essentially in regenerating the hydrogenation catalyst by interrupting the hydrogenation and successively

(i) passing liquid ammonia over the catalyst at a temperature of about 75° to about 130° C., then

(ii) passing hydrogen over the catalyst at a temperature of about 130° to about 350° C. and then

(iii) passing liquid ammonia over the catalyst again at a temperature of about 75° to about 130° C.

4,325,873

PROCESS FOR THE PREPARATION OF STYRYL-CYCLOPROPANECARBOXYLIC ACID ESTERS AND INTERMEDIATE PRODUCTS FOR THIS PROCESS

Manfred Jautelat, Burscheid; Dieter Arlt, Cologne; Reinhard Lantzsch, Leverkusen; Rainer Fuchs, Wuppertal; Hans-Jochem Riebel, Wuppertal; Rolf Schröder, Wuppertal, and Horst Harnisch, Much, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

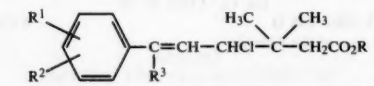
Filed Apr. 7, 1980, Ser. No. 138,044

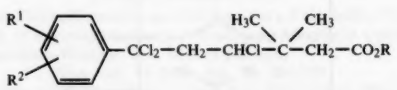
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916375

Int. Cl.³ C07D *325/00, 317/44;* **C07C** *121/60, 51/58*

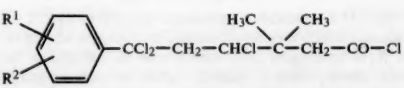
U.S. Cl. 260—338 **4 Claims**

1. A compound selected from the group consisting of



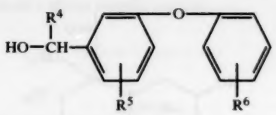


and



in which

R is C_{1-4}-alkyl or,



R^4 is hydrogen, cyano or ethynyl,
R^5 and R^6 each independently is hydrogen or fluorine,
R^1 is alkoxy or alkylthio, either of which may be optionally substituted by halogen,
R^2 is hydrogen or alkoxy, or
R^1 and R^2 together are optionally halogen-substituted alkylenedioxy, and
R^3 is hydrogen or chlorine.

4,325,874

PROCESS FOR PRODUCING ALKYLENE CARBONATES

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed May 26, 1981, Ser. No. 267,152
Int. Cl.[3] C07D *317/38, 317/36*
U.S. Cl. 260—340.2 **16 Claims**

1. A process for preparing alkylene carbonates by reacting the corresponding olefins with carbon dioxide comprising contacting the said reactants with suitable amounts of iodine or an iodide compound and an oxide or a weak acid salt of thallium (III).

15. A process for preparing alkylene carbonates by reacting the corresponding olefins with carbon dioxide comprising contacting the said reactants with suitable amounts of iodine or iodine compounds and an oxide of gold (III).

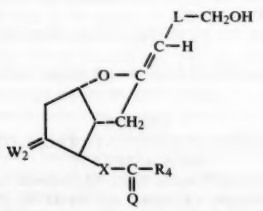
4,325,875

2-DECARBOXY-2-HYDROXYMETHYL-PGI$_2$ COMPOUNDS

Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,664
Int. Cl.[3] C07D *307/935*
U.S. Cl. 260—346.22 **11 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,
wherein W_2 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H;
wherein L is
(1) —$(CH_2)_d$—$C(R_2)_2$—,
(2) —CH_2—O—CH_2—Y—, or
(3) —CH_2CH=CH—,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2—or —$(CH_2)_2$—,
wherein Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:-β—R_8,
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_4 is
—$C(R_5)(R_6)C_gH_{2g}$—CH_3,
—$C(R_5)(R_6)$—Z—(Ph I), or
—CH_2—CH=CH—CH_2CH_3,
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—;
including the lower alkanoates thereof.

4,325,876

PROCESS FOR THE MANUFACTURE OF AN ALKENYLSUCCINIC ANHYDRIDE

Harry Chafetz, Poughkeepsie, N.Y., and Gary D. Lee, Spring, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,179
Int. Cl.[3] C07D *307/60*
U.S. Cl. 260—346.74 **9 Claims**

1. In a process for thermally reacting a reaction mixture of a polyolefin having an average molecular weight ranging from about 300 to 3500 with maleic anhydride to form an alkenyl-substituted succinic anhydride, the improvement which comprises effecting said reaction in the absence of a halogenated compound at a temperature ranging from about 100° to 300° C. while contacting said reaction mixture with oxygen-containing gas.

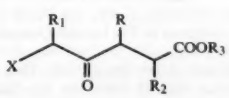
4,325,877

PRODUCTION OF INTERMEDIATES FOR ENZYME INHIBITORS

Brian W. Metcalf, Mason, and Jerry L. Adams, West Chester, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Jun. 16, 1980, Ser. No. 160,057
Int. Cl.[3] C07C *117/08, 69/74, 69/66*
U.S. Cl. 260—349 **5 Claims**

1. A compound of the formula



wherein R is CF_3, CHF_2 or CH_2F; R_1 is H or alkyl of 1 to 4 carbon atoms; R_2 is H, alkyl of 1 to 4 carbon atoms or benzyl; R_3 is alkyl of 1 to 4 carbon atoms or benzyl and X is N_3.

4,325,878

PROCESS FOR PREPARING 21-LOWER ALKOXYOXALYLPROGESTERONES

Charles A. McCombs, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,799

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.1 **17 Claims**

1. A process for preparing 21-lower alkoxyoxalyl-3-methoxypregna-3,5-diene-20-one, alkali metal salt from 3-methoxypregna-3,5-dien-20-one which comprises reacting 3-methoxypregna-3,5-dien-20-one with an alkali metal lower alkoxide base and a lower alkyloxalate in a suitable polar, nonprotic solvent.

12. 21-Methoxyoxalyl-3-methoxypregna-3,5-diene-20-one.

4,325,879

AMINO-14 STEROID DERIVATIVES AND PROCESS FOR PREPARATION OF THE SAME

Francois-Xavier Jarreau, Versailles, and Jean J. Koenig, Vernou la Celle, both of France, assignors to Etablissements Nativelle S.A., Paris, France

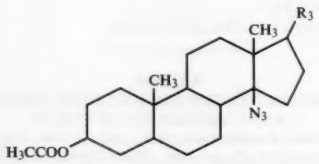
Filed Aug. 29, 1980, Ser. No. 182,546

Claims priority, application France, Aug. 31, 1979, 79 21844

Int. Cl.³ C07C *117/00, 121/86*

U.S. Cl. 260—349 **10 Claims**

10. Amino-14 steroids represented by the general formula (III):



wherein R_3 represents an acyloxy or carbalkoxy group or a hydrogen atom.

4,325,880

PROCESS FOR CONVERSION OF STEROL I-METHYL ETHERS TO STEROLS

Charles H. Foster, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,811

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **5 Claims**

1. A process for converting i-methyl ether steroids to sterols comprising refluxing said i-methyl ether steroids in an aqueous acetic acid containing about 99 to 50 weight percent acetic acid to 1 to 50 percent by weight water for a period of about 2 to 20 hours.

4,325,881

DEBROMINATION

James B. Heather, Hercules, Calif., and David R. White, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

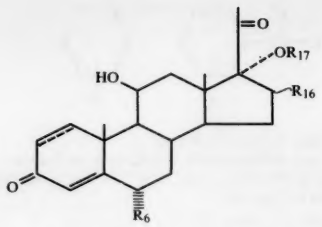
Continuation-in-part of Ser. No. 213,447, Dec. 5, 1980. This application May 15, 1981, Ser. No. 263,833

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.45 **8 Claims**

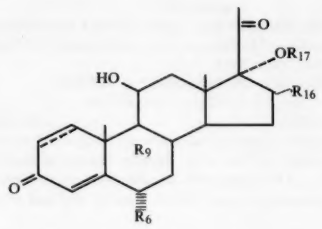
1. A process for the preparation of an 11β,17α-dihydroxyprogesterone of the formula

(VI)



which comprises reacting a 9α-halo-11β,17α-dihydroxyprogesterone of the formula

(V)



with chromous sulfate or chromous chloride or mixtures thereof and HS—CH_2—COOH, where R_6, R_9, R_{16}, R_{17}, and ~ are defined in the specification.

4,325,882

EXTRACTION OF OIL FROM HIGH OIL-BEARING SEED MATERIALS

Robert A. Reiners, Hinsdale, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 23, 1980, Ser. No. 219,742

Int. Cl.³ A23J *1/14;* C11B *1/10*

U.S. Cl. 260—412.4 **5 Claims**

1. A total immersion process for the extraction of oil from high oil-bearing seeds without contaminating the miscella with fines, consisting essentially of the steps of:

(a) dispersing finely-divided high oil-bearing seeds containing from about 10% to about 25% water by weight, in an oil solvent to give a solid-solvent dispersion;

(b) extracting oil from the solid-solvent dispersion with additional oil solvent;

(c) separating the oil solvent with oil from insoluble material; and

(d) recovering the oil from the oil solvent with oil.

4,325,883

PROCESS FOR BLEACHING NATURALLY-OCCURRING OILS AND FATS

Keith Jones, Wirral; Francis R. M. McDonnell, South Wirral; Stuart N. Morgan, Liverpool, and David W. Thornthwaite, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,250

Claims priority, application United Kingdom, Oct. 25, 1979, 37130/79

Int. Cl.³ C07C *27/10*

U.S. Cl. 260—423 **13 Claims**

1. In a process for bleaching a naturally occurring oil or fat containing a colored impurity, the improvement which comprises treating said oil or fat with an aqueous polar bleaching agent in an amount effective to convert said colored impurity

to a substantially colorless product, in the presence of an effective amount of a phase transfer catalyst.

4,325,884
METHOD FOR THE PREPARATION OF BIS(ρ-AMINOBENZOATO) COBALT

Jung W. Kang, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 27, 1980, Ser. No. 163,463
Int. Cl.³ C07F 15/06
U.S. Cl. 260—439 R **2 Claims**

1. A method for the preparation of anhydrous bis(ρ-aminobenzoato) cobalt comprising the steps of sequentially:

forming a suspension of cobalt hydroxide and ρ-aminobenzoic acid in water;

heating said suspension with stirring for a period of time of from 0.5 to about 10 hours at a temperature of from about 25° C. to about 100° C. to form a solid product;

separating said solid product from the water; and,

dehydrating said solid product in a vacuum at a temperature from about 120° C. to about 135° C. until such time as the color of said product becomes purple, indicating the completion of chelation.

4,325,885
METHOD FOR PREPARATION OF OLIGOMERIC IMINIC DERIVATIVES OF ALUMINUM

Giovanni Dozzi, Milan; Salvatore Cucinella, and Tito Salvatori, both of San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Division of Ser. No. 20,837, Mar. 15, 1979, Pat. No. 4,239,692. This application May 15, 1980, Ser. No. 149,896
Claims priority, application Italy, Apr. 12, 1978, 22221 A/78
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 R **5 Claims**

1. A process for the preparation of oligomeric derivatives of aluminum having a tridimensional "open cage" structure of the formula: $[(HAlN—R'—XR''_m)_i(H_2AlNH—R'—XR''_m)_j]$ wherein:

(a) R' is (i) a linear, branched or aryl-substituted bivalent hydrocarbon aliphatic radical having from 1 to 20 carbon atoms, (ii) a bivalent cycloaliphatic radical or alkyl- or arylsubstituted bivalent cycloaliphatic radical or (iii) an aromatic or alkylsubstituted aromatic bivalent radical having from 1 to 20 carbon atoms,

(b) X is a nitrogen or an oxygen atom,

(c) R'' is (i) a linear branched or aryl-substituted aliphatic hydrocarbon radical having from 1 to 20 carbon atoms, (ii) a cycloaliphatic hydrocarbon radical or alkyl or arylsubstituted hydrocarbon radical having from 1 to 20 carbon atoms, or (iii) an aromatic or alkylsubstituted aromatic radical having from 1 to 20 carbon atoms,

(d) m is a function of the nature of X and is equal to v-1, v being the valence of X and wherein m is greater than 1 the radicals R'' can be equal to, or different from, each other,

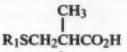
(e) i+j equals z, z being an integer between 4 and 20 and in addition i can be equal to j or different from j comprising the steps of reacting at a temperature between 0° C. and the decomposition temperature of the reaction product and at a hydrogen pressure of from 1–100 kg/cm² metallic aluminum and an amine, wherein said amine is a primary amine containing at least one group of the type —X—R'—$'_m$—wherein X, R'' and m are as defined above and obtaining oligomeric derivatives having said tridimensional "open cage" structure.

4,325,886
OPTICAL RESOLUTION OF ACYLTHIOPROPIONIC ACID

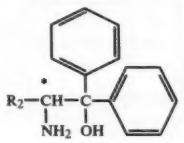
Naohito Ohashi, Nishinomiya; Hiroyūki Mizote, Ibaraki; Isamu Maruyama, Minoo; Shoji Nagata, Toyonaka; Kikuo Ishizumi, Toyonaka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 24, 1980, Ser. No. 209,680
Claims priority, application Japan, Dec. 7, 1979, 54-159456
Int. Cl.³ C07C 153/07, 153/09
U.S. Cl. 260—455 R **6 Claims**

1. A process for the optical resolution of DL-α-methyl-β-acylthiopropionic acid, which comprises contacting a DL-α-methyl-β-acylthiopropionic acid of the formula,



wherein R_1 is acetyl or benzoyl which may be substituted with a C_1–C_3 alkyl or a halogen atom, with an optically active amine of the formula,



wherein R_2 is methyl, isopropyl or isobutyl, to form diastereoisomeric salts, subjecting the formed diastereoisomeric salts to the fractional crystallization in a solvent to separate the D-acid salt from the L-acid salt, and then contacting the individual diastereoisomeric salt with acid to give D-α-methyl-β-acylthiopropionic acid and L-α-methyl-β-acylthiopropionic acid.

4,325,887
ISOCYANATOARYL SULFONIC ACID ESTERS

Gerhard Grögler, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 15,577, Feb. 26, 1979, Pat. No. 4,259,255, which is a continuation of Ser. No. 821,017, Aug. 1, 1977, abandoned. This application Oct. 31, 1980, Ser. No. 203,077
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637114
Int. Cl.³ C07C 143/68
U.S. Cl. 260—456 P **1 Claim**

1. Isocyanatoaryl sulphonic acid esters corresponding to the following general formula:

$$(R_4O—SO_2)_n—R_3(NCO)_m$$

wherein

R_3 represents an optionally C_1–C_4 alkyl-substituted (m+n)-functional aromatic hydrocarbon radical having from 6 to 15 carbon atoms;

R_4 represents an alkyl group having from 1 to 4 carbon atoms or phenyl;

m represents 1 or 2; and

n represents 1 or 2.

4,325,888
PREPARATION OF PERACID BY LIQUID-LIQUID EXTRACTION

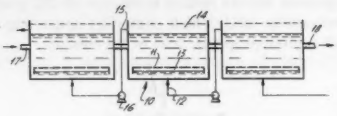
Anthony M. Hildon, Tattenhall, England, assignor to Propylox, Brussels, Belgium

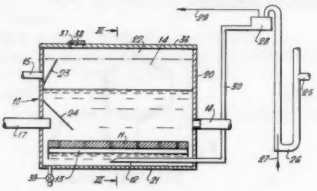
Continuation of Ser. No. 973,630, Dec. 27, 1978, abandoned. This application May 21, 1980, Ser. No. 151,817

Claims priority, application United Kingdom, Jan. 13, 1978, 01335/78

Int. Cl.³ C07C *179/10*

U.S. Cl. 260—502 R **8 Claims**





1. A process for the production of a per acid comprising passing a first liquid phase comprising an aqueous solution of hydrogen peroxide through a series of extraction stages; passing a second liquid phase comprising a solution of carboxylic acid in an organic solvent through said series of stages in countercurrent to the first phase; effecting, in each stage, dispersal of the second phase into the first phase, whereby a peracid is generated by reaction in aqueous phase between the carboxylic acid and hydrogen peroxide and is extracted into the organic solvent; allowing, in each stage, coalescence and separation of the second phase into a settled body; withdrawing the second phase from such settled body and passing it under control to the next adjacent stage, the flow of one of said first and second liquid phases in each stage being substantially vertical and the flow of the other of said liquid phases being substantially horizontal whereby the flows of the two phases in each stage are generally transverse to each other.

4,325,889
PROCESS FOR THE PREPARATION OF 1-AMINO-8-NAPHTHOL-3,6-DISULPHONIC ACID (H-ACID)

Horst Behre, Odenthal; Albert Hullen, Langenfeld; Bruno Krüger, Cologne, and Guido Steffan, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 61,157, Jul. 26, 1979, abandoned. This application Sep. 12, 1980, Ser. No. 186,884

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834166

Int. Cl.³ C07C *143/66*

U.S. Cl. 260—509 **5 Claims**

1. In a process for the preparation of a 1-amino-8-naphthol-3,6-disulphonic acid mono-alkali metal salt wherein a mixture of naphthylamine-trisulphonic acids and/or their salts is reacted with an alkali metal hydroxide solution at an elevated pressure and elevated temperature and the 1-amino-8-naphthol-3,6-disulphonic acid is subsequently separated out in the form of a mono-alkali metal salt by acidification, the improvement which comprises using for acidification a 30 to 60% strength by weight—relative to H_2SO_4 plus water—waste sulphuric acid

(a) from the precipitation of the magnesium salt of 2-nitronaphthalene-4,8-disulphonic acid, which waste acid contains 1 to 10% by weight of naphthalene- and nitronaphthalene-mono-, -di- and tri-sulphonic acids,

(b) from the precipitation of 2-naphthylamine-5,7-disulphonic acid, which waste acid contains 1 to 6% by weight of naphthylamine-mono-, -di- and -tri-sulphonic acids, or

(c) from the precipitation of naphthalene-1,5-disulphonic acid, which waste acid contains 10 to 30% by weight of naphthalene-mono-, di- and -tri sulphonic acids and may contain sodium ions.

4,325,890
PHENOL-FORMALDEHYDE CONDENSATES, THEIR PREPARATION AND THEIR USE AS DISPERSING AGENTS, LIQUEFACTION AGENTS AND TANNING AGENTS

Gunther Reitz; Vaclav Kaspar, both of Cologne; Karlhans Jakobs, Bergisch-Gladbach, and Kurt Schaupp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,384

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934980

Int. Cl.³ C07C *143/42*

U.S. Cl. 260—512 C **2 Claims**

1. Polycondensates of phenols and formaldehyde which contain sulphonic acid groups and salts thereof bonded to the phenol either directly or via a methylene bridge, characterized in that they are prepared in a one-kettle reaction, by reaction of 1 mol of the phenol with 0.3–0.9 mol of sulphonating agent in a strongly acid medium, neutralization of the product to a pH value of 7–8, further reaction with 0.6–2 mols of formaldehyde, reaction with 0.3–0.9 mol of bisulphite and then with 0.8–1.5 mols of formaldehyde at a pH value of 4–8.

4,325,891
METHOD FOR PREPARING KETOPINIC ACID HALIDES AND THE FREE ACID THEREOF

Martin F. Haslanger, Lambertville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 15, 1980, Ser. No. 216,344

Int. Cl.³ C07C *51/58, 51/04*

U.S. Cl. 260—544 L **10 Claims**

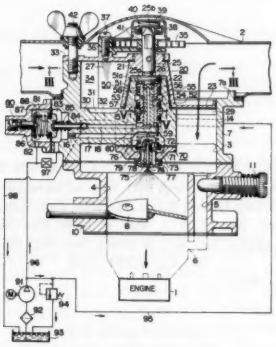
1. A method for preparing ketopinoyl acid halide, which comprises reacting 10-halo-10-sulfinylidenecamphor with ozone under basic conditions in the presence of an organic base, at reduced temperatures of within the range of from about −40° C. to about −100° C., to form the ketopinoyl halide, and recovering the ketopinoyl halide.

4,325,892
Patent Not Issued For This Number

4,325,893
FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hideo Kiuchi, Aichi; Oyuki Ogawa, Okazaki, and Nobuyuki Kobayashi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 20, 1980, Ser. No. 161,570
Claims priority, application Japan, Jun. 22, 1979, 54-79541
Int. Cl.³ F02M *7/22*
U.S. Cl. 261—50 A **5 Claims**

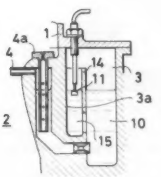


1. A fuel supply system for an internal combustion engine comprising: a supporting barrel provided with
a transverse wall,
a pair of stationary partition walls disposed substantially perpendicularly to said transverse wall and in diametrically symmetrical relationship with each other about the axis of said barrel and
a pair of air intake openings formed through said transverse wall at diametrically symmetric positions with respect to the axis of said barrel; a metering rotor having
a rotary shaft mounted for rotation on said supporting barrel,
a pair of rotary blades disposed substantially in diametrically symmetrical relationship with each other about the axis of said rotary shaft, each being in the form of a sector and carried by said rotary shaft for varying the opening area of each of said air intake openings in response to the angle of rotation of said rotary shaft, and
a pair of movable partition walls disposed substantially perpendicularly to said rotary blades and in diametrically symmetrical relationship with each other about the axis of said rotary shaft, each being carried by said rotary shaft to move toward or away from each of said stationary partition walls;
means which cooperates with said transverse walls, said stationary partition walls and said movable partition walls so as to define pressure chambers whose volume is variable;
means for transmitting the pressure downstream of said air intake openings into said pressure chambers; a fuel metering system having
a cylinder,
a spool which is coaxial and rotatable in unison with said rotary shaft and rotatably fitted into said cylinder, and
a fuel metering slit which is formed in the interface between said cylinder and said spool and whose opening area varies in response to the angle of rotation of said spool relative to said cylinder; and
a fuel injection valve securely mounted on said supporting barrel coaxially with said rotary shaft for injecting the fuel metered through said fuel metering slit into an intake passage downstream of said air intake openings.

4,325,894
APPARATUS FOR CONTROL OF LIQUID LEVEL IN CARBURETOR

Tasuku Date, Tokyo, and Toshio Nomura, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 55,697
Int. Cl.³ F02M *17/02*
U.S. Cl. 261—66 **6 Claims**



1. An apparatus for control of a liquid level in a carburetor, including: a fuel chamber; said fuel chamber being formed in a carburetor main body; a liquid level detecting element, said liquid level detecting element being disposed at an upper portion of the interior of said fuel chamber; and an electromagnetic valve, said valve being controlled to open and close by a signal of the detecting element, so that inflow of fuel into the fuel chamber is controlled; said liquid level detecting element comprising a temperature dependent resistance for detecting by contact with the liquid surface; a small chamber being formed in said fuel chamber by means of a partition wall, and said element being provided in said fuel chamber for insertion in said small chamber.

4,325,895
METHOD OF PRODUCING LARGE OBJECTS FROM RAPIDLY QUENCHED NON-EQUILIBRIUM POWDERS

David G. Morris, Lausanne, Switzerland, assignor to Institut Cerac S.A., Lausanne, Switzerland

Filed Jul. 9, 1980, Ser. No. 167,437
Claims priority, application Sweden, Jul. 9, 1979, 7905952
Int. Cl.³ B06B *3/00*
U.S. Cl. 264—23 **1 Claim**

1. In a method of producing larger objects by bonding together smaller non-equilibrium particles of amorphous or metallic powders, the steps of said method including positioning said powder in a confined space, and applying a shock wave thereto, said particles to be bonded having a critical temperature, below the melting temperature thereof, above which critical temperature thermal degradation can occur,
that improvement comprising:
precompacting said powder to a density of 30% to 60% of that of a solid body formed from said powder before applying said shock wave to said powder,
applying said shock wave to said precompacted powder so that only the surfaces of said powder particles are heated to their melting temperature and the temperature of said particles is above said critical temperature

for a time period of the order of magnitude of not more than a few microseconds, the heat at said particles surfaces being conducted to the interiors of said particles to quench the heated particle surfaces,

wherein all portions of said particles are at a temperature below said critical temperature and the outer surfaces of said particles are bonded together within the order of a few microseconds after said shock wave is applied thereto.

4,325,896

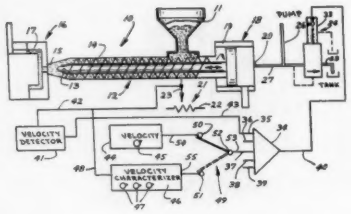
ELECTRO-HYDRAULIC RAM CONTROL APPARATUS

John L. Rodgers, Jr., Mound, Hennepin County, Minn., assignor to Solid Controls, Inc., Minneapolis, Minn.

Division of Ser. No. 881,477, Feb. 27, 1978, Pat. No. 4,222,725, and a continuation of Ser. No. 620,809, Oct. 8, 1975, abandoned. This application May 27, 1980, Ser. No. 153,471

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—40.1 **3 Claims**



1. The method of controlling the velocity of a ram for transferring material from a chamber into a mold cavity in a hydraulic molding press which comprises the steps of:

(a) sensing the velocity of the ram and comparing sensed and reference ram velocity signals to generate a difference signal; and

(b) using the difference signal to establish a signal representative of the pressure correction required in the hydraulic cylinder for said ram to maintain a predetermined desired ram velocity by controlling only the pressure of hydraulic fluid in said cylinder.

4,325,897

METHOD AND APPARATUS FOR CONTROLLING SIZE OF EXTRUDED TUBE

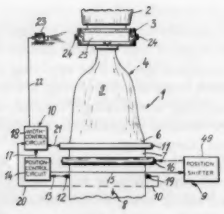
Ludwig Zerle, Paarstr. 2, 8905 Mering, and Klaus Scharm, Rossinistr. 12, 8900 Augsburg, both of Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,970

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919472

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—40.3 **13 Claims**



1. A method for producing a foil strip of predetermined width, comprising the steps of:

extruding, from an at least partially rotatable extruder head, a foil tube of substantially uniform wall thickness;

pressurizing, by means of a blower and at least one valve attached to said head, said tube to form from at least a portion thereof a bubble;

collapsing said tube from said bubble to produce a two-layer web;

transporting said web away from said extruder head;

monitoring parallel edges of said web to determine an actual width thereof;

generating an electromagnetic width-correction signal as a function of the divergence between said actual width and said predetermined width;

wirelessly transmitting said width-correction signal to a receiver on said head; and

adjusting, according to the wirelessly transmitted width-correction signal, the pressurization of said tube by said blower and said valve.

4,325,898

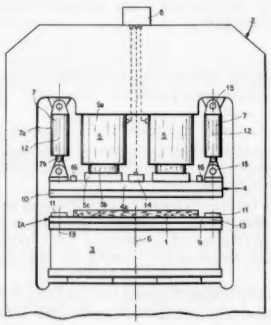
METHOD OF OPERATING A PLATEN PRESS

Jürgen Pesch, Krefeld-Traar, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Division of Ser. No. 127,572, Mar. 6, 1980, Pat. No. 4,289,467. This application Sep. 8, 1980, Ser. No. 185,161

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—40.5 **1 Claim**



1. A method of operating a platen press for plane-parallel compression of a particleboard mat to produce particleboard of a predetermined thickness, comprising:

(a) placing upon a lower fixed platen and beneath an upper movable deformable platen of said press, a mat to be formed into particleboard;

(b) placing upon said fixed lower platen and along each longitudinal edge of said mat rigid bars having said predetermined thickness;

(c) moving downwardly said upper platen to compress said mat until said upper platen contacts said bars, while deforming upwardly said upper platen at locations intermediate said bars by contact with said mat,

(d) measuring said deformation of said upper platen; and

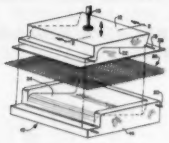
(e) applying to said deformed intermediate locations of said upper platen controlled pressure responsive to said measured deformation of said upper platen to reform said upper platen for plane-parallel compression of said mat, and to form said particleboard to a uniform thickness corresponding to the thickness of said bars.

4,325,899

METHOD FOR HEAT FORMING HARDBOARD AND OTHER TYPES OF FORMING BOARD

John N. Cole, Maineville, and David A. Hettel, Cincinnati, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 30, 1980, Ser. No. 164,627
Int. Cl.³ B29C *1/02, 17/00*
U.S. Cl. 264—86 **4 Claims**



1. A method of heat forming board sheets comprising the steps of:

(a) placing a cheet of heat formable board, having a water content below about 20 percent by weight, a cellulose content of between 43 and 73 percent by weight, and a polyolefin binder of between 12 and 30 percent by weight in a die having upper and lower platens with mating contours, and having a mesh screen located adjacent one of said platens, said screen being sized to extend outward to form a border about the periphery of said die between said upper and lower platens;

(b) pressing said platens together thereby imposing a pressure upon said sheet of between 50 and 300 pounds per square inch and heating said sheet such that said sheet becomes plastic and is formed by said platens to said mating contours but said sheet does not become embedded in said screen, and gases released from said sheet follow the contours of said screen to escape from said die;

(c) separating said platens; and

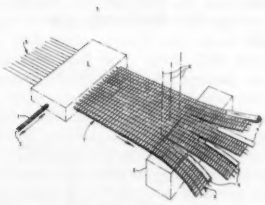
(d) removing said formed sheet from said die and from said screen.

4,325,900

MANUFACTURE OF BRUSHES

David Holding, Bolton, and John D. Chancellor, Mickleover, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,789
Int. Cl.³ B29D *31/00*
U.S. Cl. 264—103 **11 Claims**



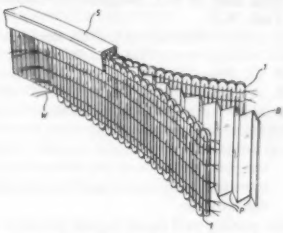
1. A method of manufacturing brush components comprising forming a multifilament tow from synthetic resinous bristle filaments, feeding the tow in one direction to a loom as the weft, weaving from the tow a bristle fabric extending in a direction transverse to the one direction by using traditional warp yarns, feeding the fabric in the transverse direction through an extruder to cause portions of the synthetic resinous bristle wefts in the vicinity of the extruder heads to be heated to a temperature sufficient to at least soften them, and extruding onto the fabric across the softened portions of the bristle wefts as the fabric is fed through the extruder, at least one strip of a polymeric material, the extruded polymeric material and the softened portions of the bristle wefts fusing together during the extruding step to lock them together.

4,325,901

METHOD OF BRUSH MANUFACTURE

David Holding, Bolton, and John D. Chancellor, Mickleover, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,788
Int. Cl.³ B29C *24/00, 17/00*
U.S. Cl. 264—146 **30 Claims**



20. A method of manufacturing a brush component from at least two beaded brush strips, each strip formed of a plurality of synthetic resinous bristle filaments comprising the steps of:

arranging the beaded brush strips with the beaded portions and bristle filaments adjacent each other in aligned side-by-side relation;

positioning at least one barrier fin of synthetic resinous material between the beaded brush strips and aligned therewith with a side edge region of the fin and beaded portions forming a sandwich; and

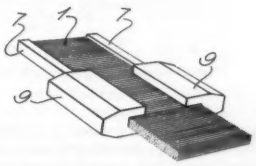
subjecting the sandwich to heat wherein the beaded portions and side edge region of the fin are fused and formed so as to enable the brush component to be secured to a support.

4,325,902

METHOD OF MANUFACTURE OF BRUSH COMPONENTS

David Holding, Bolton, England, assignor to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,790
Int. Cl.³ B29D *31/00*
U.S. Cl. 264—146 **15 Claims**



1. A method of manufacturing a brush component comprising feeding a plurality of predetermined lengths of brush bristle formed of a first synthetic resinous material from a supply into the nip of at least one pair of endless haul-off belts so that said bristles are arranged in an adjacent longitudinally extending array substantially parallel to each other with their ends substantially in line, the array being of substantially uniform thickness and density, passing the array of bristles between two extrusion dies, heating an area of the array along the length of the array of bristles as the array is advanced past the extrusion dies so as at least to cause outer surface portions of said heated bristles to melt, extruding layers of a second synthetic resinous material onto both sides of said area along the length of the array of bristles as the array is advanced past the extrusion dies

so as to penetrate between the bristles and to hold them together, the first and second synthetic resinous materials being sufficiently compatible so that they will fuse with each other during this extruding step, and slitting the bristles substantially along the centre of the array after they emerge from the extruder to provide at least one brush component.

4,325,903

PROCESSING OF MELT PROCESSIBLE LIQUID CRYSTAL POLYMER BY CONTROL OF THERMAL HISTORY

Kurt F. Wissbrun, Short Hills, and Yoshiaki Ide, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 15, 1980, Ser. No. 169,012
Int. Cl.³ B28B *3/20*
U.S. Cl. 264—176 R **53 Claims**

1. A process for the extrusion of melt processable liquid crystal polymer which provides improved processability characteristics, said process comprising the steps of:

(a) subjecting said liquid crystal polymer to an elevated temperature between the differential scanning calorimetry transition temperature and the degradation temperature of the polymer;

(b) cooling said liquid crystal polymer to a processing temperature which is between said differential scanning calorimetry transition temperature and said elevated temperature and at which said liquid crystal polymer is less subject to degradation than at said elevated temperature; and

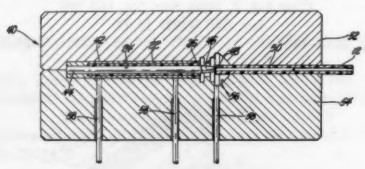
(c) extruding said liquid crystal polymer into the form of a shaped article having mechanical properties which are improved over those of articles formed from liquid crystal polymer which has not been subjected to said elevated temperature.

4,325,904

MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY

Thomas J. Frankhouse, Southfield, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 6,587, Jan. 26, 1979, abandoned. This application Feb. 14, 1980, Ser. No. 121,776
Int. Cl.³ B29D *31/00*
U.S. Cl. 264—242 **6 Claims**



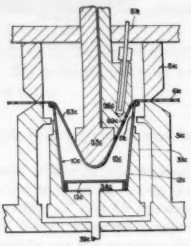
1. A method of making a motion transmitting remote control assembly of the type including a sleeve having a bore extending therethrough and a male swivel portion with a partial convex spherical surface extending from its intersection with the exterior of the sleeve to a lip defined by its intersection with said bore and pivotally supported in a female swivel portion having a partial concave spherical surface, said method including the steps of; enclosing and covering a portion of the convex spherical surface extending from the intersection thereof with the exterior of the sleeve while leaving the remainder of said convex surface extending to the lip exposed, plugging said bore in said sleeve contiguously with said lip to prevent entry of material into said bore past said lip, placing said sleeve in a mold cavity with said remainder of said convex surface exposed and said bore plugged, and injecting organic polymeric material into the cavity for molding the fitting about the male swivel portion.

4,325,905

METHOD FOR PRODUCING A DOUBLE-WALLED PAPER CONTAINER

Keiichi Takahashi, Ichikawa, Japan, assignor to Tokan Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 887,372, Mar. 16, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,792
Claims priority, application Japan, Mar. 23, 1977, 52-31151; Mar. 23, 1977, 52-31152; Mar. 23, 1977, 52-31153; Mar. 23, 1977, 52-31154; May 24, 1977, 52-59347; May 24, 1977, 52-59348
Int. Cl.³ B29C *17/04;* B29D *3/00;* B32B *1/10*
U.S. Cl. 264—516 **2 Claims**



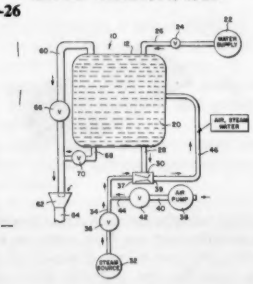
1. A method for producing a double-walled paper container having a peeping window in the side wall comprising the steps of placing a paper container having a peeping window forming through hole in a side wall thereof in a shaping die set, positioning a piece of synthetic resin film or sheet on the top of said shaping die set in tension across the mouth of said paper container, stretching said film or sheet into the cavity in said paper container by means of an assist plug, cooling said film or sheet in the area to be aligned with said peeping window forming through hole, and applying negative pressure to the cavity in said die set to further stretch the portion of said film or sheet except for the portion to be aligned with said window forming through hole so as to apply the film or sheet portion to the inner surface of said paper container with said cooled and unstretched film or sheet portion being aligned with said peeping window through hole.

4,325,906

PROCESS FOR QUIETING STEAM INJECTED INTO WATER IN A STERILIZER

Edward M. Kackos, Belmar, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,206
Int. Cl.³ ~~A61L 2/06;~~ *2/20*
U.S. Cl. 422—26 **2 Claims**



1. A process for quietly injecting steam having air inherently present therein into a body of water in a sterilizer chamber, comprising the steps of:

supplying steam at high pressure;

continuously mixing minute quantities of air quietly with

said steam, said air being at a higher pressure than said steam pressure; and

continuously injecting quietly a stream of said air, mixed with said steam into said body of water.

4,325,907

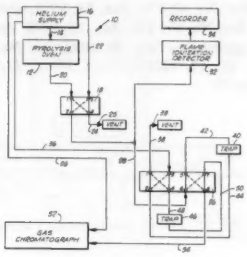
PYROLYSIS PRODUCT GASES ANALYZING METHOD AND SYSTEM

Harry Dembicki, Jr., and Roger A. Woods, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 37,938, May 9, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,737

Int. Cl.³ G01N *31/12, 31/06, 31/08, 21/74*

U.S. Cl. 422—54 **6 Claims**



1. A system for subjecting one or more materials to pyrolysis and for trapping and analyzing the product gases therefrom comprising:

a pyrolysis oven having an inert gas inlet connection and a product gas outlet connection;

a means defining a source of inert gas;

a first conduit connected between said means defining a source of inert gas and said inert gas inlet connection of said oven;

a two-position four-port valve including first, second, third and fourth ports whereby in one position said first and third ports are communicated with said second and fourth ports, respectively, and in the other position, said first and third ports are communicated with said fourth and second ports, respectively;

a second conduit connected between said product gas outlet of said oven and said first port of said four-port valve;

a third conduit connected between said means defining a source of inert gas and said third port of said four-port valve;

a two-position eight-port valve having first, second, third, fourth, fifth, sixth, seventh and eighth ports whereby in one position said first, third, fifth and seventh ports are communicated with said second, fourth, sixth and eighth ports, respectively, and in the other position, said first, third, fifth and seventh ports are communicated with said fourth, second, eighth and sixth parts, respectively;

a fourth conduit connected between said second port of said four-port valve and said sixth port of said eight-port valve;

a first trap means for condensing, retaining and then vaporizing said pyrolysis product gases having an inlet connection and an outlet connection;

a fifth conduit connected between said fifth port of said eight-port valve and said inlet connection of said first trap means;

a sixth conduit connected between said outlet connection of said first trap means and said second port of said eight-port valve;

a seventh conduit connected between said means defining a source of inert gas and said third port of said eight-way valve;

a second trap means for condensing, retaining and then vaporizing said pyrolysis product gases having an inlet connection and an outlet connection;

an eighth conduit connected between said fourth port of said eight-port valve and said inlet connection of said second trap means;

a ninth conduit connected between said outlet connection of said second trap means and said seventh port of said eight-way valve;

a gas analyzer; and

a tenth conduit connected between said gas analyzer and said eighth port of said eight-port valve.

4,325,908

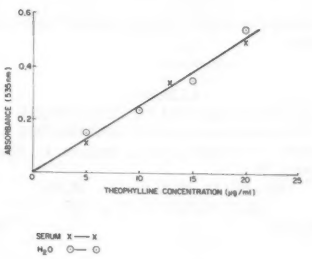
THEOPHYLLINE TEST

Bernard M. Scheinthal, Pine Brook, and Lester Chafetz, New Providence, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 20, 1980, Ser. No. 122,912

Int. Cl.³ G01N *21/78, 33/52*

U.S. Cl. 422—61 **3 Claims**



1. A diagnostic test kit for the determination of theophylline levels in a body fluid, comprising in combination (a) a vessel in which is placed a predetermined measured volume of body fluid containing theophylline values, (b) an alkaline hydroxide in solid particulate form in an amount whose heat of solution when combined with said predetermined volume of body fluid is sufficient to raise the temperature of said fluid to a temperature at which reaction with said alkaline hydroxide acts to hydrolyze any theophylline present to theophyllidine, (c) a solid organic acid in stoichiometric excess relative to said alkaline hydroxide, and (d) a tetrazo chromogen which is a stabilized salt of tetrazotized dianisidine.

4,325,909

FLUID TRANSFER APPARATUS

Wallace H. Coulter, Miami Springs, and Walter M. Mena, Hialeah Gardens, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 24, 1980, Ser. No. 200,143

Int. Cl.³ G01N *1/14, 35/06*

U.S. Cl. 422—63 **8 Claims**

1. A vertically and horizontally movable arm structure for fluid transfer, comprising:

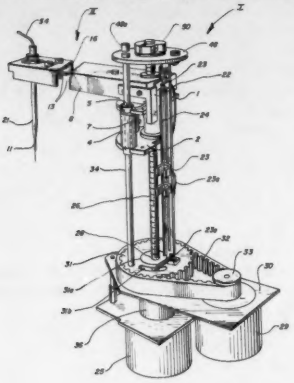
(A) a generally elongate arm member for holding a fluid probe at a distal end thereof; and

(B) an oscillating assembly mounted to said arm member, for oscillation of said probe to stir fluid into which said probe is inserted, wherein said oscillating assembly includes:

(1) a mounting member for positioning said probe adjacent said distal end of said arm member;

(2) at least one tubular member attached to said mounting member and aligned substantially parallel to said arm member; and

(3) drive means for linear oscillation of said tubular member substantially along the tubular axis thereof, in order



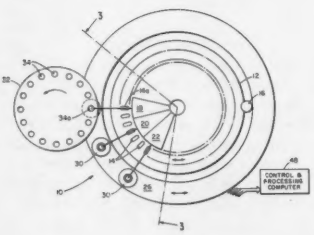
to produce oscillation of said attached probe mounting member.

4,325,910

AUTOMATED MULTIPLE-PURPOSE CHEMICAL-ANALYSIS APPARATUS

Michael Jordan, Merrimack, N.H., assignor to Technicraft, Inc., Amherst, N.H.

Filed Jul. 11, 1979, Ser. No. 56,688
Int. Cl.³ G01N *21/27, 35/06*
U.S. Cl. 422—64 **12 Claims**



1. In automated sample analysis apparatus for analyzing each of a plurality of samples successively and in liquid state for at least one constituent, said apparatus having

(i) sample containers on a first transport,

(ii) reaction vessels and optical cuvette elements on a second transport,

(iii) reagent containers on a third transport,

(iv) liquid transfer means, and

(v) measuring means,

the improvement wherein

said second transport conveys said reaction vessels and said cuvette elements in separate respective single ordered successions successively along a first path,

said third transport conveys said reagent containers along a second path coextensive at least in part with said first path,

said liquid transfer means are arranged for transferring liquid from sample containers on said first transport to reaction vessels being conveyed along said first path, and are arranged for transferring liquid between containers on said third transport and reaction vessels conveyed along said first path at any of plural locations where said second path is coextensive with said first path, and

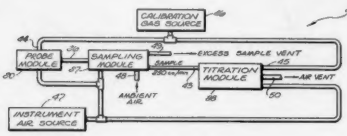
said measuring means includes photometer source means arranged for illuminating said cuvette elements with optical measuring energy at different locations along at least a selected part of said first path, and further includes photometric detector means and detector carriage means, said carriage means being arranged for carrying said detector means, relative to said second transport, about a path extending along at least a part of said first path receiving radiant energy responsive to illumination of said cuvette elements by said optical source means.

4,325,911

STACK GAS ANALYZER AND THERMAL OXIDATION DEVICE THEREFOR

A. L. Vincent, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 48,475, Jun. 14, 1979, abandoned, which is a division of Ser. No. 871,195, Jan. 23, 1978, Pat. No. 4,211,748.
This application May 20, 1980, Ser. No. 151,715
Int. Cl.³ G01N *31/16, 31/12, 31/06*
U.S. Cl. 422—75 **5 Claims**



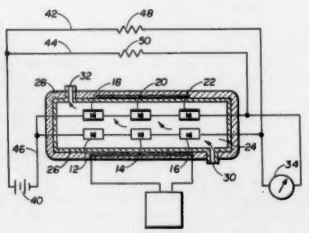
1. Combustion apparatus comprising: a device for burning combustible material to provide a stack gas mixture including sulfur dioxide and total reduced sulfur; means to sequester a sample of said mixture; means for cooling said sample to dehydrate said mixture; means to remove the sulfur dioxide in said sample from said sample leaving a remnant including total reduced sulfur; means for reheating said remnant to cause sulfur or sulfur compounds in said remnant to be oxidized to form sulfur dioxide and means to detect the amount of sulfur dioxide whenever the same is formed by the said reheating means as aforesaid.

4,325,912

CARBON MONOXIDE DETECTION APPARATUS

Kenneth B. Sawa, Yorba Linda, and Radhakrishna M. Neti, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 1, 1980, Ser. No. 165,164
Int. Cl.³ G01N *27/16, 27/18*
U.S. Cl. 422—95 **19 Claims**



1. A carbon monoxide detector comprising;

(a) at least one forward biased solid-state measuring diode connected to provide a first output signal;

(b) an equal number of forward biased solid-state reference diodes connected to provide a second output signal;

(c) a deposit of an oxide of a noble metal in heat conducting

relationship to the measuring diode, said deposit serving as an catalyst for carbon monoxide oxidation; and

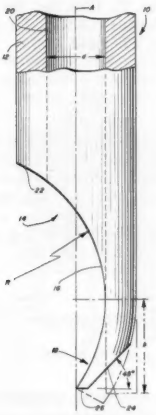
(d) electrical means for generating an output signal that varies in accordance with the difference between the first and second output signals.

4,325,913

REAGENT PROBE AND METHOD FOR FABRICATION THEREOF

Stephen C. Wardlaw, Branford, Conn., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 20, 1980, Ser. No. 198,523
Int. Cl.³ B01L *3/02*
U.S. Cl. 422—100 **4 Claims**



1. A probe for aspirating and dispensing fluids, comprising:

(A) a tubular bodywall having a terminal orifice formed by a substantially arcuate termination of said bodywall which arcuate termination is obliquely concave with respect to the interior of said bodywall; and

(B) an inwardly projecting tip formed as the general extremity portion of said arcuate termination, wherein the projection of said tip extends inwardly in relation to said bodywall and the portion of said tip immediately adjacent to the end of said tip has a narrow, flat leading face lying in a plane generally perpendicular to the tubular axis of said bodywall so that said leading face is sufficiently narrow to only partially obstruct axial entry and exit of fluid through said orifice into said bodywall, said leading face being positioned at a distance in the range of about ¼ to about ¾ of the distance perpendicularly across the outside diameter of said bodywall.

4,325,914

LABORATORY PRESSURE VESSEL

Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed Sep. 2, 1980, Ser. No. 182,984
Int. Cl.³ B01L *3/00, 3/16;* **B65D** *53/00, 45/00*
U.S. Cl. 422—102 **7 Claims**

1. A laboratory pressure vessel comprising

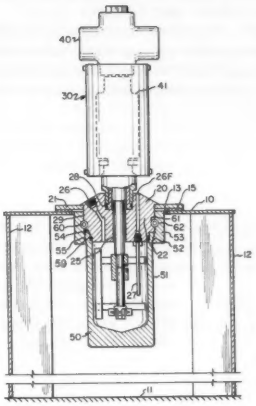
a normally stationary platform,

means for supporting the platform above the surface upon which the supporting means rests,

a pressure vessel cover fixedly secured to the platform and having a portion extending downwardly below the platform, said cover having utility passages therein,

a pressure vessel body comprising a cylindrical side wall and a bottom, said body having an open end arranged to fit over the portion of the pressure vessel cover extending downwardly below the platform, grooves in said cover and/or vessel body defining a first annular space for receiving a means for sealing said cover to said vessel body, said pressure vessel body having no openings through the side wall below the said first annular space,

a quick securing means comprising facing channels in the pressure vessel cover and pressure vessel body between



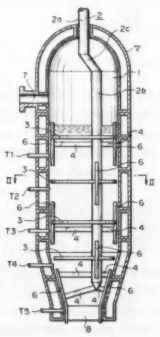
the facing cylindrical surfaces thereof and located above said first annular space, which facing channels define a second annular space, an opening through the cylindrical side wall of the body outwardly of the second annular space and in open communication therewith, flexible means for inserting through said body side wall opening and filling said second annular space thereby holding the cover and vessel body together.

4,325,915

BULK POLYMERIZATION REACTOR

Hiroshi Sato, Ichihara; Takehiko Okamoto, Nagoya, and Akira Asada, Ikeda, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Mar. 27, 1980, Ser. No. 134,520
Int. Cl.³ B01J *19/18*
U.S. Cl. 422—135 **11 Claims**



1. A bulk polymerization reactor comprising

a vertically elongated cylindrical polymerization vat which defines a reaction chamber provided with a material supply port and a bottom product resin discharge port,

a rotary shaft including an off-center longitudinal section

vertically extending through said reaction chamber, said longitudinal section having a degree of eccentricity from the center axis of said reaction chamber of from about 10% to about 150%,

a plurality of horizontal perforated discs fixed to said off-center longitudinal section of said rotary shaft, said perforated discs leaving a cylindrical clearance between their periphery and a corresponding wall section of said reaction chamber, and

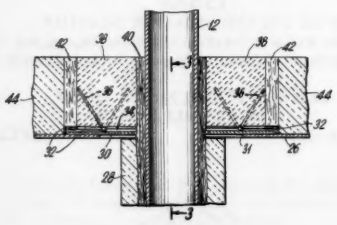
a plurality of shearing blades fixedly coupled to said off-center longitudinal section of said rotary shaft by means of an arm, each blade leaving a clearance between its outer face and a corresponding wall section of said reaction chamber.

4,325,916

REFORMER FURNACE SEAL

Arthur C. Worley, Mt. Tabor, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,409
Int. Cl.³ B01J *8/06, 19/02;* F27D *1/16*
U.S. Cl. 422—197 **1 Claim**



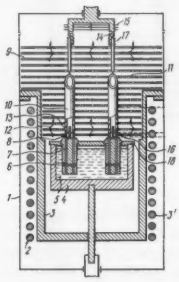
1. In a hydrocarbon reforming furnace having a furnace box, a plurality of vertically oriented reforming tubes with their inlet and outlet ends extending outside said furnace box, a horizontally oriented inlet header provided with insulation on the interior thereof, a horizontally oriented outlet header provided with insulation on the interior thereof, the improvement comprising a refractory seal cast in place about the lower portion of the vertically oriented reforming tubes wherein such refractory seal is supported on metal support strips and sliding metal base plates with "V" shaped welding studs securing said refractory seal to said sliding metal base plates whereby said refractory seal which has a different coefficient of expansion than said base plates can nonetheless move therewith and the interface of the cast-in-place refractory seal with the tubes and the furnace floor is additionally sealed with ceramic fiber blankets so as to further increase the air sealing of the refractory seal and the tube vibration dampening function of said refractory seal, said refractory seal having a thermal expansion rate similar to that of the insulated outlet header.

4,325,917

METHOD AND APPARATUS FOR PRODUCING SAPPHIRE TUBES

Boris B. Pelts, Lesnaya ulitsa, 63/43, kv. 157, Moscow; Beniamin A. Tumasian, prospekt Lenina, 39/12, kv. 51, Erevan; Leonid P. Egorov, Profsojuznaya ulitsa, 87, korpus 1, kv. 92, Moscow; Lev M. Zatulovsky, Orlikov pereulok, 8, kv. 55, Moscow; Petr M. Chaikin, Staroslobodsky pereulok, 14, kv. 18, Moscow; Efim A. Freiman, 2 Vladimirskaya ulitsa, 15, korpus 1, kv. 53, Moscow; Eduard A. Chalian, ulitsa Gvardeiskaya, 9, kv. 30, Erevan; Grant I. Abramian, ulitsa Olega Koshevogo, 26, kv. 3, Erevan; Stepan E. Azoian, 7 ulitsa Agesan, 17, Erevan, and Kliment A. Kostandian, 10 ulitsa Zeituna, 10, kv. 5, Erevan, all of U.S.S.R.

Continuation of Ser. No. 926,492, Jul. 20, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 205,985
Claims priority, application U.S.S.R., Jul. 21, 1977, 2509201
Int. Cl.³ B01J *17/18*
U.S. Cl. 422—249 **7 Claims**



1. An apparatus for producing crystalline sapphire tubes comprising an air-tight chamber having an inert gas blanket; an electrically conducting cylindrical container; an induction heater for indirect heating including a coil wound around said container; a crucible including dies having capillary passages for feeding a melt to the tube pulled, said crucible being located in said container below the upper edge thereof so that the length of said container extending above said crucible is roughly equal to the height of said crucible, and the side wall of the said length is made thinner than elsewhere; first heat-insulating shields of electrically conductive material stacked above said crucible within said length of the container where the said wall is thinner than elsewhere so that the shields are subjected to the electromagnetic field of the induction heater; second heat-insulating shields stacked above said upper edge of said container, said first and second heat-insulating shields having perforations positioned and dimensioned for permitting convective gas flow of said inert gas blanket through said shields; and a pin of a heat conducting material having a melting point exceeding 2100° C. mounted at the top of each die coaxially therewith, said first and second heat-insulating shields and said pin cooperating to maintain a specified temperature gradient within the pulling region of said tube.

4,325,918

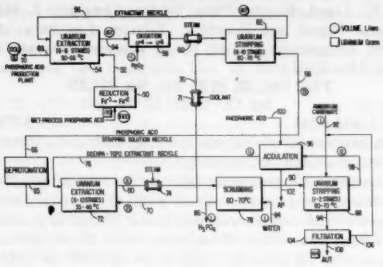
DEPROTONATION OF AN ALKYLPHENYL ACID PHOSPHATE EXTRACTANT

Donald A. Luke, Seffner; Alex Magdics, Lakeland; Sandra L. Paris, Temple Terrace, and Ralph E. Worthington, Winter Haven, all of Fla., assignors to UNC Recovery Corporation, Mulberry, Fla.

Filed Aug. 31, 1979, Ser. No. 71,657
Int. Cl.³ C01G *43/00;* C01B *25/237*
U.S. Cl. 423—10 **28 Claims**

1. In a process for recovering uranium from wet-process phosphoric acid comprising extracting uranium into an alkylphenyl acid phosphate extractant in which acidic impurities in the wet-process phosphoric acid are transferred to the extract-

ant resulting in hydrolysis of the extractant, the improvement comprising decreasing the proton concentration of said extractant resulting from said acidic impurities whereby said hydrolysis of said extractant is decreased.

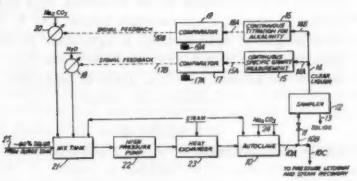


4,325,919

AUTOCLAVE SODA DIGESTION OF SCHEELITE CONCENTRATES WITH FEEDBACK CONTROL

Paul B. Queneau, Golden; Leo W. Beckstead, Arvada, and Dale K. Huggins, Golden, all of Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,910
Int. Cl.³ C01G *41/00*
U.S. Cl. 423—61 **20 Claims**



1. In a continuous process for maintaining high WO_3 extraction efficiency in the soda ash digestion of tungsten concentrates, wherein a tungsten concentrate is slurried with an aqueous sodium carbonate solution and digested at a temperature selected in the range of about 180° C. to 310° C. and a pressure ranging from about 145 psig to 1430 psig, the improvement which comprises:

forming a slurry of a tungsten concentrate charge of selected average particle size in an aqueous sodium carbonate solution of concentration selected to fall in the range of about 50 gpl to 200 gpl at a Na_2CO_3/WO_3 weight ratio ranging from about 0.9 to 2,

the concentration of the Na_2CO_3 solution being substantially inversely correlated to the selected digestion temperature and substantially directly correlated to the Na_2CO_3/WO_3 weight ratio,

digesting said tungsten concentrate in an autoclave at said selected temperature and pressure for a time selected to provide the desired high extraction efficiency of WO_3 equivalent from said tungsten concentrate and form a pregnant liquor thereof, and

while said digestion is in progress determining the specific gravity value and the Na_2CO_3 concentration value of said pregnant liquor,

comparing each of said values to a corresponding reference value predetermined to reflect the desired digestion conditions in said autoclave and provide a difference feedback signal,

and then varying the amount of Na_2CO_3 and water fed to the slurry in accordance with the corresponding feedback signal obtained in order to maintain the digestion in the autoclave at a desired high extraction efficiency of over about 95%.

4,325,920

METHOD TO OXIDIZE Ti^{+3} DURING THE SULFURIC ACID DIGESTION OF TITANIFEROUS SLAGS

Michel Gueguin, Tracy, Canada, assignor to QIT-Fer et Titane du Quebec, Inc., Canada

Filed Nov. 12, 1980, Ser. No. 206,300
Int. Cl.³ C01G *23/00*
U.S. Cl. 423—82 **8 Claims**

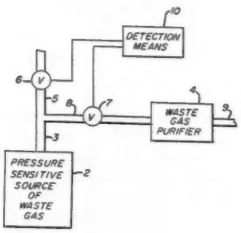
1. A method of reducing the titanous sulfate content and correspondingly increasing the titanic sulfate content of the digestion product produced by the sulfuric acid digestion of titaniferous slags having a substantial content of titanous compounds which comprises digesting said slags with acid in the presence of a lignin product, said lignin product assisting in the oxidation of the Ti^{+3} content of the slag.

4,325,921

WASTE GAS PURIFICATION SYSTEMS AND METHODS

John E. Aiken, Monroeville Borough, and William J. Didycz, Whitehall Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 8,678, Feb. 2, 1979, Pat. No. 4,238,460. This application May 7, 1980, Ser. No. 147,459
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—210 **16 Claims**



14. Process for controlling a waste gas stream comprising:

(1) maintaining a substantially uniform pressure in a pressure sensitive source of a waste gas stream,

(2) passing said waste gas stream through a first conduit having its inlet end connected to the source of the waste gas stream and downstream to a waste gas purifier, and

(3) adjusting valves in the first conduit and in a second by-pass conduit connected to the source of the waste gas stream in response to one or more predetermined conditions harmful to the waste gas purifier to stop the flow of waste gases to the waste gas purifier and cause the waste gases to flow through the by-pass conduit, said adjusting of the valves being conducted in a predetermined manner which maintains a substantially uniform pressure in the pressure sensitive source of the waste gas stream.

4,325,922

TREATMENT OF HIGH-TEMPERATURE STACK GASES CONTAINING CONDENSABLE BORON COMPOUNDS

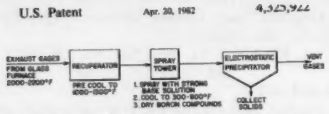
Mark A. Bryant, Columbus, Ohio, assignor to United McGill Corporation, Groveport, Ohio

Continuation of Ser. No. 86,133, Oct. 18, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,789
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 **8 Claims**

1. A process for treating high-temperature stack gases contaminated with condensable boron oxides or boric acids to produce ecologically-acceptable effluent gases comprising the steps of:

(a) simultaneously cooling the stack gases to a temperature

about 300°–800° F. and converting condensable boron oxides and boric acids to non-volatile boron compounds by spraying the stack gases with an aqueous solution of a strong base,



(b) collecting and removing by electrostatic precipitation the thus-formed non-volatile boron compounds from the cooled gases and

(c) venting the resulting ecologically-acceptable effluent gases to the atmosphere.

4,325,923

CONTACTING OF PLURAL PHASES

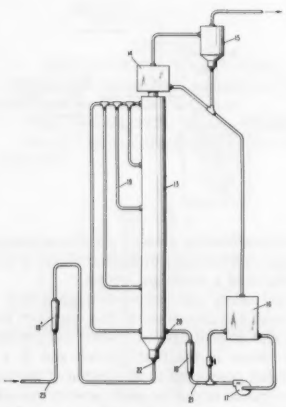
Roger Botton, Lyons, and Dominique Cosserat, Saint Priest, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 60,889, Jul. 26, 1979, abandoned. This application May 30, 1980, Ser. No. 155,119

Claims priority, application France, Jul. 26, 1978, 78 22094

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—234 **10 Claims**



1. In a process for the contacting of a gaseous phase with a liquid phase by cocurrently introducing the plural, physically disparate phases into a contactor, the improvement comprising

(i) introducing the gaseous phase at a velocity which exceeds its phase transition inversion velocity and is thereby sufficient to create a dispersion of the liquid phase in the gas and establish at most the following zones, from bottom to top, in the column:

(a) an emulsion zone of constant liquid concentration,

(b) an intermediate zone of decreasing liquid concentration, and

(c) a zone of constant liquid concentration wherein the liquid concentration is less than that in the emulsion zone,

but wherein said velocity is less than its multiple critical point velocity; and,

(ii) introducing the liquid phase at a velocity sufficient to establish a mass liquid concentration in the emulsion zone which is between its corresponding phase transition inversion point and multiple critical point values.

4,325,924

UREA REDUCTION OF NO_x IN FUEL RICH COMBUSTION EFFLUENTS

John K. Arand, Rancho Palos Verdes; Lawrence J. Muzio, Laguna Niguel, and Donald P. Teixeira, Los Altos, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 25, 1977, Ser. No. 844,556

Int. Cl.³ B01D *53/00*

U.S. Cl. 423—235 **8 Claims**

1. A process for selectively reducing nitrogen oxides in a combustion effluent, comprising:

contacting with urea a nitrogen oxide containing effluent stream having an equivalence ratio of fuel over oxygen, greater than one wherein said urea is present in an amount of from about 0.5 to 10 moles per mole of nitrogen oxide at a temperature in the range of about 1900° to 3000° F.

4,325,925

METHOD FOR THE REMOVAL OF NITRIC OXIDE FROM GAS STREAMS

Frank C. Haas, Arvada, and Gerald B. Faudel, Denver, both of Colo., assignors to Tosco Corporation, Los Angeles, Calif.

Filed Jun. 6, 1980, Ser. No. 156,911

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—239 **8 Claims**

1. A method for reducing the amount of nitric oxide in a gas containing same which comprises:

introducing a gas containing nitric oxide and water, the volume of water in said gas being at least equal to the volume of nitric oxide to be removed, into contact with elemental iron at a temperature below 200° C. for a sufficient length of time to react a significant portion of said nitric oxide with said water and elemental iron to thereby reduce the amount of nitric oxide in said gas.

4,325,926

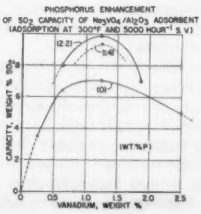
PROCESS FOR REMOVING SULFUR DIOXIDE FROM A GAS

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 18,083, Mar. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 2,054, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 861,461, Dec. 16, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 137,940

Int. Cl.³ B01J *8/00;* **C01B** *17/78;* **B01J** *27/14, 23/16*

U.S. Cl. 423—244 **5 Claims**



1. A method for removing sulfur dioxide from a waste gas which consists essentially of contacting said waste gas, at sulfur dioxide absorbing conditions, with a composition consisting essentially of alumina, sodium vanadate and phosphate or sodium phosphovanadate or a mixture thereof, said composition, based on said alumina, containing an amount of said vandate, calculated as vanadium, in the range of from about 1 to 20%, and sufficient of said phosphate to provide a phosphorus-to-vanadium atomic ratio in the range of from about 0.2–1.8 to 1.

4,325,927

PURIFIED MONOAMMONIUM PHOSPHATE PROCESS

Charles W. Weston, Prairieville, and John W. Wen, Baton Rouge, both of La., assignors to Agrico Chemical Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 103,459, Dec. 14, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 214,991

Int. Cl.[3] C01B *25/28*

U.S. Cl. 423—310 25 Claims

13. In a process for the production of purified monoammonium phosphate from wet process phosphoric acid wherein the phosphoric acid is ammoniated to form monoammonium phosphate, the steps comprising ammoniating wet process phosphoric acid having a concentration of between about 25% and 35% by weight P_2O_5 to a pH between about 1.5 and 2.5 to form a crystalline precipitate, said ammoniation taking place at a temperature between about 75° C. and 105° C. for a period of about 10 minutes or more and thereafter aging the ammoniated phosphoric acid for about 10 minutes or more after the ammoniation to a pH between about 1.5 and 2.5 is completed and prior to further ammoniation to form said monoammonium phosphate.

4,325,928

ROCK TREATMENT PROCESS

Edward J. Lowe, Stourbridge, England, assignor to Albright & Wilson Limited, Warley, England

Filed Feb. 22, 1980, Ser. No. 123,687

Claims priority, application United Kingdom, Mar. 1, 1979, 07334/79

Int. Cl.[3] C01B *25/16*

U.S. Cl. 423—320 26 Claims

1. A process for preparing wet process phosphoric acid from phosphate rock containing acid insoluble heat labile iron sulfide and organic compounds wherein phosphate rock is heated to give a heated rock and the heated rock is reacted with a mixture of sulfuric acid and phosphoric acid to form calcium sulfate and phosphoric acid, comprising

heating said phosphate rock at a temperature between 380° and 600° C. which is insufficient to convert all said acid insoluble iron sulfide into acid soluble iron sulfide to convert at least some of the organic compounds to carbon to produce a heat treated rock comprising carbon particles and acid insoluble iron sulfide;

reacting said heat treated rock containing carbon particles with said mixture of sulphuric acid and phosphoric acid to form (i) a solid fraction comprising calcium sulfate, carbon particles, and acid insoluble iron sulfide, and (ii) wet process phosphoric acid; and

separating said solid fraction to leave purified wet process phosphoric acid.

4,325,929

METHOD OF PREPARING CRYSTALLINE SILICA POLYMORPH

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 12,869, Feb. 16, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,237

Int. Cl.[3] C01B *33/12*

U.S. Cl. 423—339 7 Claims

1. A process for hydrothermally preparing a crystalline silica polymorph which comprises:

(1) subjecting an aqueous reaction mixture to high shear mixing for 4 to 100 hours at a temperature of from 250° to 380° F., said reaction mixture containing from 2 to 6 weight percent of sodium oxide, from 8 to 16 weight percent of silicon oxide, from 0.01 to 0.25 weight percent of disodium 4-dodecylated oxydibenzene sulfonate, from 2 to 5 weight percent of anhydrous sulfuric acid, from 0.5 to 3 weight percent of sodium chloride and either from 6 to 13 weight percent of tetrapropyl ammonium bromide or a mixture which comprises from 2 to 4 weight percent of tripropylamine, from 1 to 3 weight percent of 1-bromopropane and from 3 to 6 weight percent of methyethyl ketone, and

(2) maintaining said aqueous reaction mixture in an unagitated state for 10 to 100 hours to crystallize said silica polymorph, and wherein said silica polymorph after calcination at 1,000° F. for 16 hours, has as the four strongest d-values of its X-ray diffraction pattern, d=10.9, d=4.06, d=3.83 and d=3.33.

4,325,930

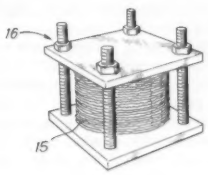
PRODUCING A SILICON CARBIDE STRUCTURE AND MULTIDIRECTIONAL SILICON CARBIDE TEXTURE

Andre M. Vallet, Saint-Aubin, France, assignor to Societe Europeenne de Propulsion, Putraux, France

Filed Dec. 30, 1980, Ser. No. 221,448

Int. Cl.[3] C01B *31/36;* C04B *35/56*

U.S. Cl. 423—345 5 Claims



1. A method for producing a silicon carbide structure, comprising the steps consisting in:

impregnating a carbon structure by immersion into a bath containing 10 to 30% by weight of fugitive resin, 20 to 40% by weight of silicon powder in suspension, the remainder being essentially constituted by a solvent of said resin,

drying the impregnated structure so as to obtain an easy to handle structure coated with resin and silicon powder bonded in the resin, and

heat-treating the coated structure in neutral atmosphere at a temperature of between 1450° C. and 1800° C., for a time period of between 2 to 60 minutes and substantially at atmospheric pressure, in order to let the silicon react with the carbon and to obtain the desired carbide structure.

4,325,931

METHOD OF PRODUCING AMMONIA

Derek C. Lewis, Chapmansgatan 5, 112 36 Stockholm, Sweden

PCT No. PCT/SE78/00096, § 371 Date Aug. 19, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00407, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 18, 1978, Ser. No. 154,416

Claims priority, application Sweden, Dec. 19, 1977, 7714433

Int. Cl.[3] C01C *1/04*

U.S. Cl. 423—363 16 Claims

1. A method of producing ammonia by catalyzed reaction between hydrogen and nitrogen, which comprises contacting a mixture containing hydrogen and nitrogen gases with an intermetallic compound consisting essentially of at least one metal selected from the groups consisting of alkali metals and alkaline earth metals, with the exception of Be, and at least one metal selected from the group consisting of transition metals.

4,325,932
METHOD OF PRODUCING NITROUS OXIDE

Charles M. Bartish, Bethlehem, Pa., and Donald F. Tucker, Doraville, Ga., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1980, Ser. No. 219,166
Int. Cl.³ C01B *21/22*
U.S. Cl. 423—402 **7 Claims**

1. A method for producing nitrous oxide by reacting nitric oxide and carbon monoxide in the presence of a catalyst containing $PdCl_2$, $CuCl_2$ and A, wherein A is selected from the group consisting of LiCl, NaCl, KCl, $MgCl_2$ and $CaCl_2$, characterized in that said catalyst is dissolved in an anhydrous alcohol.

4,325,933
PROCESS FOR STABILIZATION OF SODIUM PERCARBONATE

Tadao Matsumoto, Chiba, and Masaki Koizawa, Iateishi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

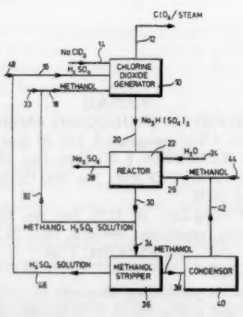
Continuation of Ser. No. 31,430, Apr. 19, 1979. This application Jun. 11, 1980, Ser. No. 158,434
Claims priority, application Japan, Apr. 28, 1978, 53/51763
Int. Cl.³ C01B *31/00, 15/37;* C09K *3/00*
U.S. Cl. 423—415 P **8 Claims**

4. A process for treating sodium percarbonate particles to stabilize same, which consists essentially of the steps of: spraying onto the surfaces of preformed particles of sodium percarbonate having a particle size of from 100 to 1,000 microns, a treating agent consisting essentially of an aqueous solution of one or more water-soluble alkaline earth metal salts selected from the group consisting of magnesium sulfate, magnesium chloride, calcium chloride, strontium chloride and barium chloride, under conditions effective to react from 0.07 to 0.3 mole of said alkaline earth metal salt per mole of said sodium percarbonate to form a thin surface layer of alkaline earth metal carbonate on the surfaces of said sodium percarbonate particles; and then separating and drying said surface-treated sodium percarbonate particles.

4,325,934
PRODUCTION OF CHLORINE DIOXIDE WITH CONVERSION OF BY-PRODUCT SOLID PHASE SODIUM ACID SULPHATE TO ITS NEUTRAL FORM

Richard Swindells, Caledon, and Maurice C. J. Fredette, Mississauga, both of Canada, assignors to Erco Industries Limited, Islington, Canada

Filed Sep. 22, 1980, Ser. No. 189,703
Int. Cl.³ C01B *11/02, 17/90, 5/00*
U.S. Cl. 423—478 **19 Claims**



1. A process for the conversion of solid phase sodium acid sulphate to solid phase neutral sodium sulphate, which comprises:

contacting said sodium acid sulphate while in said solid phase with water in a weight ratio of water to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.6:1 to about 0.8:1 and with methanol in a weight ratio of methanol to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.3:1 to about 0.8:1 to form solid phase neutral sodium sulphate from said solid phase sodium acid sulphate and an aqueous phase containing sulphuric acid, and

separating the aqueous phase from the solid phase neutral sodium sulphate.

7. A process for the production of chlorine dioxide, which comprises:

reducing chlorate ions in a reaction zone with chloride ions in an aqueous acid reaction medium containing sulphuric acid in an amount greater than about 6 normal to form chlorine dioxide and chlorine,

maintaining said reaction medium at its boiling point under a subatmospheric pressure applied to said reaction zone while precipitating a sodium acid sulphate from the reaction medium,

removing said precipitated sodium acid sulphate salt from the reaction medium,

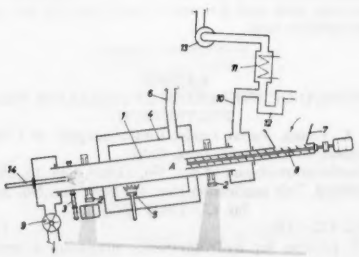
contacting said removed sodium acid sulphate salt with water in a weight ratio of water to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.6:1 to about 0.8:1 and with a water soluble solvent selected from methanol, ethanol and acetone in a weight ratio of water soluble solvent to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.3:1 to about 0.8:1 to cause conversion of said sodium acid sulphate to neutral sodium sulphate and formation of an aqueous phase containing sulphuric acid, and

removing solvent from said aqueous phase.

4,325,935
METHOD AND AN INSTALLATION FOR OBTAINING OR RECOVERING HYDROFLUORIC ACID

Albert Krepler, Vienna, Austria, assignor to Ruthner Industrieanlagen-Aktiengesellschaft, Vienna, Austria

Filed Jun. 13, 1980, Ser. No. 159,452
Claims priority, application Austria, Jun. 15, 1979, 4267/79
Int. Cl.³ C01B *7/19*
U.S. Cl. 423—483 **6 Claims**



1. A method of obtaining hydrofluoric acid from heavy metal fluorides, comprising contacting heavy metal fluorides with water vapour at 400° to 600° C. and at an overall pressure of about 1 bar while maintaining the water vapour partial pressure in a sufficiently linear relationship with the temperature in this range at a minimum of 0.9 bar at 400° C. and at a minimum of 0.5 bar at 600° C., separating the solid reaction material from the gaseous phase while still hot, and recovering aqueous hydrofluoric acid from the gaseous phase by cooling.

4,325,936

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Hugh W. Gowdy, Irvine, and Donald M. Fenton, Anaheim, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 50,193, Jun. 20, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,888

Int. Cl.[3] C01B *17/05*

U.S. Cl. 423—573 R 30 Claims

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

(a) contacting said gas stream with a regenerable quinone-containing washing solution so as to absorb said hydrogen sulfide into said washing solution, the washing solution introduced into contact with said gas stream comprising an aqueous solution having a pH between about 5 and about 10 and containing (1) solubilized vanadium, (2) one or more water-soluble quinones, (3) thiocyanate ions and (4) a water-soluble carboxylate complexing agent, said washing solution having a selected molar ratio of said vanadium to said quinones above about 15, said molar ratio being selected to substantially reduce the formation of contaminant sulfate salts;

(b) allowing the absorbed hydrogen sulfide to react with constituents of said washing solution so as to convert said absorbed hydrogen sulfide substantially exclusively to elemental sulfur;

(c) oxidatively regenerating the washing solution from step (b) so as to form a regenerated washing solution; and

(d) separating said elemental sulfur from said washing solution.

4,325,937

MICROBIAL INSECTICIDE

Kemet D. Spence, Potlatch, Id., and Robert E. Andrews, Pullman, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 134,325, Mar. 26, 1980, which is a division of Ser. No. 33,895, Apr. 27, 1979, Pat. No. 4,223,007, which is a continuation-in-part of Ser. No. 835,817, Sep. 22, 1977, abandoned. This application Mar. 5, 1981, Ser. No. 240,846

Int. Cl.[3] A61K *39/02, 39/12;* C12K *1/08;* A01N *15/00*

U.S. Cl. 424—16 12 Claims

1. A method of embedding microorganisms and their biologically active chemical products in microbeads, comprising:

(a) mixing a buffered aqueous solution containing microorganisms and their biologically active chemical products with an aqueous solution containing a nucleic acid; and

(b) mixing the said mixture with an aqueous solution containing a proteinaceous material, thereby spontaneously forming microbeads having the microorganisms and chemical products embedded therein.

4,325,938

PESTICIDE AND PROCESS FOR ITS PRODUCTION

Wolfgang Kapp, Offenbach am Main, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Schädlingsbekämpfung mbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 968,089, Dec. 11, 1978, abandoned, which is a continuation of Ser. No. 627,023, Oct. 30, 1975, abandoned. This application Apr. 1, 1980, Ser. No. 136,363

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1974, 2454172

Int. Cl.[3] A01N *25/00, 25/26, 25/10*

U.S. Cl. 424—18 18 Claims

1. A pesticide comprising molded body made of a water-insoluble thermoplastic polyvinylacetate in which finely divided magnesium phosphide is embedded with the particles of said metal phosphide being dispersed in said molded body, the molded body being coated on both sides with a nonwoven fabric comprising cellulose fibers which is permeable to water vapor and fibers of which substance extend into said body into contact with metal phosphide particles contained therein.

4,325,939

ZINC DERIVATIVES AND THEIR USE IN DENTAL COMPOSITIONS

Nutan B. Shah, New Rochelle, N.Y., assignor to Richardson-Vicks Inc., Wilton, Conn.

Filed Sep. 22, 1980, Ser. No. 189,152

Int. Cl.[3] A61K *7/16, 7/24, 31/315;* C07F *3/06*

U.S. Cl. 424—55 8 Claims

1. A compound selected from the group consisting of an ammonium or an alkali metal zinc citrate.

4,325,940

ANTI-MICROBIAL, COSMETIC AND WATER-TREATING IONENE POLYMERIC COMPOUNDS

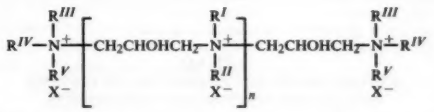
Harold A. Green, Havertown, Pa.; John J. Merianos, Middletown, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Kewanee Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 29,778, Apr. 13, 1979, which is a continuation-in-part of Ser. No. 902,894, May 4, 1978, Pat. No. 4,190,644, which is a continuation-in-part of Ser. No. 744,617, Nov. 24, 1976, Pat. No. 4,089,977. This application Feb. 8, 1980, Ser. No. 119,948

Int. Cl.[3] C07D *413/14, 413/06, 401/06, 401/14*

U.S. Cl. 424—70 56 Claims

1. A polymeric product having the formula:



in which R^I and R^{II} are (I) the same or different monovalent, branched or unbranched, alkyl groups of from 1 to 18 carbon atoms, optionally substituted by from 1 to 2 hydroxyl groups; or (II) form a 5, 6 or 7 membered monoheterocyclic ring when taken together with N, or (III) form the N-morpholino group when taken together with N and an oxygen atom; wherein R^{III}, R^{IV} and R^V are (I) the same or different, branched or unbranched, alkyl groups of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups or (II) R^{III} is a branched or unbranched alkyl group of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups, and R^{IV} and R^V form a 5, 6 or 7 membered monoheterocyclic ring when taken together with N; or (III) R^{III} is a branched or unbranched alkyl group of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups and R^{IV} and R^V form the N-morpholino group when taken together with N and an oxygen atom; wherein X is a halogen of atomic weight above 30; and wherein n is an integer of from 2 to 20.

15. A method of inhibiting microorganisms which comprises applying the product of claim 1 in a carrier to said microorganisms in an amount sufficient to inhibit their growth.

4,325,941

SOLID FORMULATIONS CONTAINING PHEROMONES AND METHOD OF USING SAME

Anacleto Dal Moro; Franco Pinamonti, and Amedeo Capizzi, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 210,728, Nov. 26, 1980, abandoned. This application May 26, 1981, Ser. No. 267,395

Claims priority, application Italy, Nov. 29, 1979, 27702 A/79

Int. Cl.[3] A01N *17/14*

U.S. Cl. 424—84 21 Claims

1. A solid formulation comprising a sex pheromone of in-

sects as an active substance, a carrier composed of a mixture of an inert material having absorbing properties and of an inert material having adsorbing properties as main vehicle, a wetting agent, a dispersant, a sticker, an ultraviolet stabilizer and an antioxidant, said formulation having the following composition to 100%:

A	Active substance - sex pheromone	0.5–10% by weight
B	Inert carrier having absorbing properties consisting essentially of a material selected amongst fossil meal, kaolin and attapulgite	20–50% by weight
C	Inert carrier having adsorbing properties consisting essentially of activated carbon with a specific surface from 300 to 900 m^2/g	10–50% by weight
D	Mixture of polyoxyethylated alkylphenol (1–10% by weight), sodium polymethacrylate (50–94% by weight) and sodium lignosulphonate (5–40% by weight), the total being 100%	5–15% by weight
E	U.V. Stabilizer consisting of derivatives of benzophenone having stabilizing properties	0.5–10% by weight
F	Antioxidant selected amongst the esters of 3-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid with stearic alcohol or with pentaerithritol (tetrakis ester)	0.5–10% by weight

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4,325,942

UBIDECARENONE COMPOSITIONS HAVING ENHANCED ABSORPTION PROPERTIES

Kazuo Taki, Komae, and Hideo Takahira, Sakado, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,194
Claims priority, application Japan, Jul. 25, 1979, 54-93636
Int. Cl.³ A61K *37/48*
U.S. Cl. 424—94 **4 Claims**

1. An orally administrable composition for the treatment of hypertensive disease which comprises ubidecarenone in admixture with not less than 0.2 parts per 1 part by weight of ubidecarenone of a higher fatty acid having 12 to 18 carbon atoms, a monoglyceride of a higher fatty acid having 12 to 18 carbon atoms or a mixture thereof.

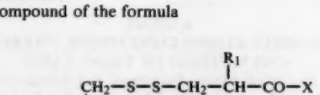
4,325,943

MIXED DISULFIDES

Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624.
This application Dec. 22, 1980, Ser. No. 219,043
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

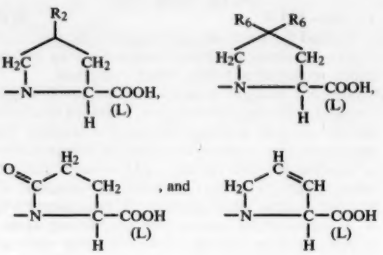


and salts thereof, wherein

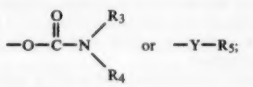
A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, tryptophyl, lysyl, arginyl and prolyl provided that at least one of A and A_1 is tryptophyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

X is an α-imino acid residue selected from the group consisting of



R_2 is hydrogen, hydroxy, lower alkyl, halogen, keto,



Y is O or S;

R_5 is lower alkyl, phenyl, phenyl-lower alkylene, 1- or 2-naphthyl, biphenyl, substituted phenyl, substituted phenyl-lower alkylene, substituted 1- or 2-naphthyl, or substituted biphenyl wherein said substituent is on the phenyl ring and is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy and hydroxy;

R_6 is halogen or —Y—R_7;

R_7 is lower alkyl, phenyl, phenyl-lower alkylene, substituted phenyl, or substituted phenyl-lower alkylene wherein said substituent is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy, or the R_7 groups join in an alkylene chain of 2 or 3 carbons to complete a 5- or 6-membered ring or said ring in which one of the carbon atoms has a lower alkyl or di(lower alkyl)substituent; and

R_3 and R_4 are independently selected from the group consisting of hydrogen and lower alkyl.

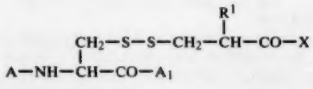
4,325,944

MIXED DISULFIDES

Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624.
This application Dec. 22, 1980, Ser. No. 219,176
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

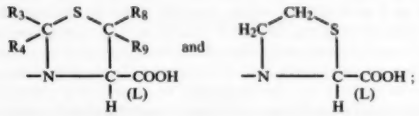


and salts thereof, wherein

A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, tryptophyl, lysyl, arginyl and prolyl provided that at least one of A and A_1 is tryptophyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

X is an α-imino acid residue selected from the group consisting of



R_3, R_4, R_8 and R_9 are independently selected from the group consisting of hydrogen and lower alkyl.

4,325,945

MIXED DISULFIDES

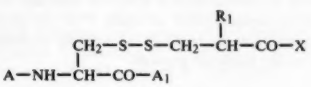
Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624. This application Dec. 22, 1980, Ser. No. 219,283

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*

U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

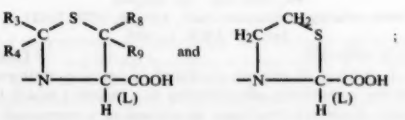


and salts thereof, wherein

A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, lysyl, arginyl, and prolyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

X is an α-imino acid residue selected from the group consisting of



R_3, R_4, R_8 and R_9 are independently selected from the group consisting of hydrogen and lower alkyl.

4,325,946

ANTHRACYCLINE GLYCOSIDES, THEIR PREPARATION, USE AND COMPOSITIONS THEREOF

Alberto Bargiotti, Milan; Giueseppe Cassinelli, Voghera; Sergio Penco, Milan; Federico Arcamone, Nerviano, and Aurelio di Marco, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

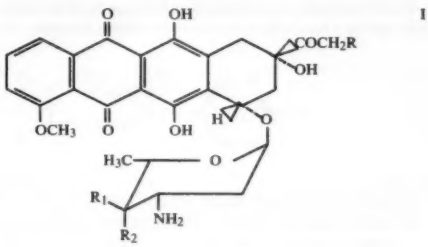
Filed Aug. 28, 1980, Ser. No. 182,119

Claims priority, application United Kingdom, Sep. 1, 1979, 30392/79

Int. Cl.[3] **A61K** *31/71;* **C07H** *15/22, 15/24*

U.S. Cl. 424—180 **14 Claims**

1. An anthracycline glycoside of the formula:



I

wherein R is hydrogen or hydroxy, one of R_1 and R_2 is methyl and the other of R_1 and R_2 is hydroxy, and pharmaceutically acceptable acid addition salts thereof.

14. A method of inhibiting the growth of transplanted P 388 leukemia comprising intraperitoneally administering to a host afflicted therewith, a therapeutically effective amount of an anthracycline glycoside as claimed in claim 1.

4,325,947

4-DEMETHOXY-4'-DEOXYDOXORUBICIN

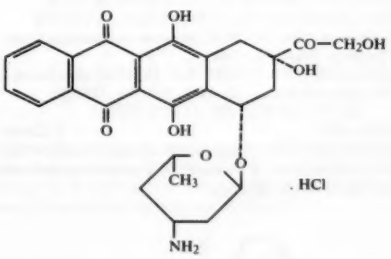
Sergio Penco, Milan; Giuliano Franchi, Corsico; Federico Arcamone, Nerviano, and Annamaria Casazza, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed May 12, 1981, Ser. No. 263,002

Int. Cl.[3] **A61K** *31/70;* **C07H** *15/24*

U.S. Cl. 424—180 **4 Claims**

1. A compound of general formula I:



(I)

which is 4-demethoxy-4'-deoxydoxorubicin hydrochloride.

2. A method of inhibiting the growth of a tumor selected from the group consisting of L_{1210} leukemia, transplanted Gross leukemia and lymphocitic P_{388} leukemia which comprises administering to a host afflicted with said tumors an amount of a compound according to claim 1 sufficient to inhibit the growth of said tumors.

4,325,948
COMBATING PESTS WITH 2-CYCLOALKYL-PYRIMIDIN-5-YL-(THIONO) (THIOL)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

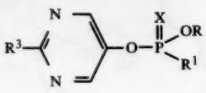
Filed Jul. 27, 1979, Ser. No. 61,336

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835492

Int. Cl.³ A01N *57/16, 57/24, 57/32;* **C07F** *9/65*

U.S. Cl. 424—200 **10 Claims**

1. A 2-cycloalkyl-pyrimidin-5-yl-(thiono)(thiol)-phosphoric (phosphonic) aced ester or ester-amide of the formula



in which

R is alkyl with 1 to 5 carbon atoms,

R^1 is alkyl, alkoxy, alkylthio or alkylamino each with 1 to 5 carbon atoms per alkyl radical, or phenyl,

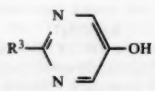
R^3 is cycloalkyl with 3 to 6 carbon atoms, and

X is oxygen or sulphur.

7. An arthropodicidal or nematicidal composition containing as active ingredient an arthropodicidally or nematicidally effective amount of a compound according to claim **1** in admixture with a diluent.

8. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematidially effective amount of a compound according to claim **1**.

10. A compound of the formula



wherein R^3 is cycloalkyl of 3 to 6 carbon atoms.

4,325,949
COMBINATIONS OF AGENTS WHICH GIVE ENHANCED ANTI-INFLAMMATORY ACTIVITY

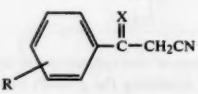
Adolph E. Sloboda, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 121,851, Feb. 15, 1980, abandoned. This application Dec. 23, 1980, Ser. No. 219,750

Int. Cl.³ A61K *31/60, 31/275, 31/615*

U.S. Cl. 424—230 **5 Claims**

1. An anti-inflammatory composition of matter comprising, in additive combination, a mixture of 2-(acetyloxy)benzoic acid and an agent of the formula:



wherein X is oxo or imino and R is hydrogen or fluoro with the proviso that R may not be ortho-fluoro when X is imino, in the proportion of the 2-(acetyloxy)benzoic acid to the agent of from 100:1 to 1:100 parts by weight.

4,325,950
PLATINUM CAFFEINE CHLORIDE ANION COMPLEX AND METHOD

Roger E. Cramer, Honolulu, Hi., assignor to The Research Corporation of the University of Hawaii, Honolulu, Hi.

Filed Feb. 19, 1980, Ser. No. 122,144

Int. Cl.³ A01N *9/00;* **A61K** *31/555;* **A61L** *13/00*

U.S. Cl. 424—245 **9 Claims**

1. The complex comprising the potassium salt of Pt[caffeine] Cl_3.

4,325,951
1-OXADETHIACEPHALOSPORIN DERIVATIVES AND ANTIBACTERIAL USE THEREOF

Shigeharu Inouye, Yokohama; Takashi Tsuruoka, Kawasaki, and Katsuyoshi Iwamatsu, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

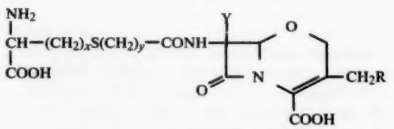
Filed Oct. 24, 1980, Ser. No. 200,410

Claims priority, application Japan, Nov. 2, 1979, 54-141297

Int. Cl.³ A61K *31/535;* **C07D** *498/04*

U.S. Cl. 424—248.52 **10 Claims**

1. A 1-oxadethiacephalosporin of the formula (I):



(I)

wherein R is (1-methyl-1H-tetrazole-5-yl)thio group; (1-carboxylmethyl-1H-tetrazole-5-yl)thio group; (2-carboxymethyl-1H-tetrazole-5-yl)thio group; (4-methyl-5-oxo-6-hydroxy-4,5-dihydro-1,2,4-triazine-3-yl)thio group; (8-amino-tetrazolo-(1,5-b)-pyridazine-6-yl)thio group; pyridinium group; 4-carbamoyl-pyridinium group, or (1-dimethylaminoethyl-1H-tetrazole-5-yl)thio group, Y is a hydrogen atom or a methoxy group, and x and y each denote an integer of 1, 2 or 3, and pharmaceutically acceptable salt and ester thereof.

9. A method fo inhibiting bacterial growth, which comprises administering an antibacterially effective and safe amount of the 1-oxadethiacephalosporin of claim **1** or its pharmaceutically acceptable salt or ester to an animal, including men, susceptible to the bacterial growth.

4,325,952
METHOD OF TREATING ABSTINENCE SYNDROME WITH CYCLOAKLYLTRIAZOLES

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco, Italy

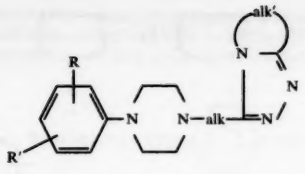
Division of Ser. No. 25,273, Mar. 29, 1979. This application Aug. 29, 1980, Ser. No. 182,424

Claims priority, application Italy, Apr. 18, 1978, 22421 A/78

Int. Cl.³ A61K *31/495*

U.S. Cl. 424—250 **9 Claims**

1. A method of treating symptons of nicotine abstinence syndrome comprising, administering to a mammal which has nicotine abstinence syndrome an amount of a compound of formula I or is pharmaceutically acceptable salt which is sufficient to remove said symptoms from the mammal, said formula I being:



wherein "alk" is selected from the group consisting of linear and branched divalent aliphatic chains having from 1 to 10 carbon atoms; "alk" is selected from the group consisting of linear and branched divalent aliphatic chains having from 1 to 5 carbon atoms; and each R and R' is selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, halogen, alkyloxy having from 1 to 3 carbon atoms, hydroxy, trifluoromethyl and methylthio.

4,325,953
4-ARYL-4-ARYLOXYPIPERIDINES

Robin G. Shepherd, Burnham, England, assignor to John Wyeth and Brother Limited, Maidenhead, England

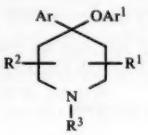
Filed Sep. 3, 1980, Ser. No. 183,789

Claims priority, application United Kingdom, Sep. 14, 1979, 32046/79

Int. Cl.³ A61K *31/445;* **C07D** *211/44*

U.S. Cl. 424—250 **20 Claims**

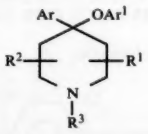
1. A compound selected from the group consisting of a 4-aryl-4-aryloxypiperidine of the formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 are hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl or benzyl, Ar is phenyl optionally substituted by one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro or amino groups and Ar^1 is a phenyl radical optionally substituted by one or more cyano, methylsulphinyl, methylsulphonyl, lower alkoxy, trifluoromethyl, lower alkyl, lower alkenyl, halogen, nitro, amino or acylamino groups or is a 2- or 4-pyridyl, 2-pyrazinyl or 2-quinolinyl radical with the proviso that when R^3 is hydrogen or benzyl and Ar is phenyl, Ar^1 is other than phenyl or phenyl substituted by one or more lower alkoxy, trifluoromethyl, lower alkyl, halogen or nitro groups.

3. A compound selected from the group consisting of a 4-aryl-4-aryloxypiperidine of the formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 are hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl or benzyl, Ar is phenyl optionally substituted by one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro or amino groups and Ar^1 is a phenyl radical optionally substituted by one or more cyano, methylsulphinyl, methylsulphonyl, lower alkoxy, trifluoromethyl, lower alkyl, lower alkenyl, halogen, nitro, amino or acylamino groups or is a 2- or 4-pyridyl, 2-pyrazinyl or 2-quinolinyl, radical.

4,325,954
PYRROLOPYRIMIDINONES AND PYRROLOIMIDAZOLONES AND THEIR COMPOSITIONS AND THERAPEUTIC METHODS

Jacques G. Maillard, Versailles; Tri Vovan, Igny, and Jacky M. Legeai, Palaiseau, all of France, assignors to Laboratoires Jacques Logeais, Issay les Moulineaux, France

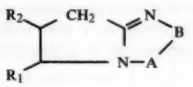
Filed Feb. 1, 1980, Ser. No. 117,482

Claims priority, application France, Feb. 20, 1979, 79 04266

Int. Cl.³ A61K *31/505;* **C07D** *471/04, 487/04*

U.S. Cl. 424—251 **4 Claims**

1. A compound selected from the group consisting of compounds of the formula:



(I)

in which:

R_1 is hydrogen and R_2 is selected from phenyl and benzofuryl or R_2 is hydrogen and R_1 is selected from phenyl and benzyl; and

group —A—B— is —CO—CHR—CH_2— in which R is selected from hydrogen, C_{1-6} alkyl, phenyl, benzyl, methylthioethyl and —$(CH_2)_m$—COOR' in which m is selected from 0, 1 and 2 and R' is C_{1-6} alkyl,

and a pharmacologically acceptable acid addition salt thereof.

4,325,955
SUBSTITUTED 3-BENZHYDRYLTHIAZOLO(3,2-a)PYRIMIDINES

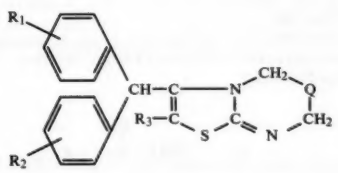
William B. Wright, Jr., Woodcliff Lake; Andrew S. Tomcufcik, Old Tappan, both of N.J., and Joseph W. Marisco, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,346

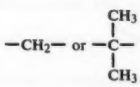
Int. Cl.³ A61K *31/415, 31/425;* **C07D** *513/04*

U.S. Cl. 424—251 **11 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 may be the same or different and are hydrogen, fluoro, chloro, bromo or alkyl having up to 3 carbon atoms; R_3 is hydrogen or alkyl having up to 3 carbon atoms; and Q is a divalent moiety of the formula:



and the pharmacologically acceptable acid-addition salts thereof.

10. The method of promoting diuresis in a mammal which

comprises administering to said mammal an effective diuretic amount of a compound of claim **1**.

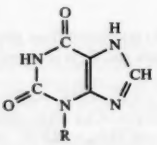
4,325,956

METHOD AND PHARMACEUTICAL PREPARATION FOR TREATING CHRONIC OBSTRUCTIVE AIRWAY DISEASE AND CARDIAC DISEASE, AND INTERMEDIATES FOR THE PREPARATION OF THERAPEUTICALLY ACTIVE XANTHINE DERIVATIVES

Per G. Kjellin, Lund, and Carl G. A. Persson, Löberöd, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Filed Oct. 5, 1979, Ser. No. 82,402
Claims priority, application Sweden, Oct. 20, 1978, 7810946
Int. Cl.³ A61K *31/52*
U.S. Cl. 424—253 **5 Claims**

1. A method for the treatment of chronic obstructive airway disease, characterized in administering to a host suffering therefrom of a therapeutically active dose of a compound of the formula



I

or a therapeutically acceptable salt thereof, wherein R is $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$ or $-CH_2CH(CH_3)_2$.

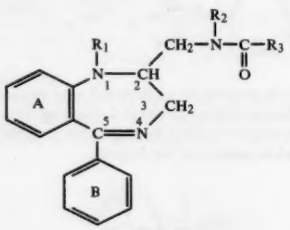
4,325,957

2-ACYLAMINOMETHYL-1,4-BENZODIAZEPINE DERIVATIVES AND THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Horst Zeugner, Hanover, Fed. Rep. of Germany; Dietmar Roemer, Allschwil, Switzerland; Hans Liepmann, Hanover, and Wolfgang Milkowski, Burgdorf, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH., Hanover, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,487
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952279
Int. Cl.³ C07D *401/12, 403/12, 405/12, 409/12*
U.S. Cl. 424—263 **21 Claims**

1. A compound selected from the group consisting of 2-acylaminomethyl-1H-2,3-dihydro-1,4-benzodiazepine derivatives of the Formula I



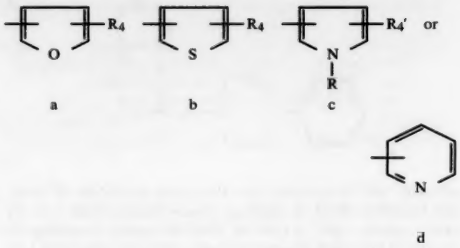
(I)

wherein

R_1 represents hydrogen, lower alkyl, lower alkenyl or cyclopropylmethyl,

R_2 represents hydrogen, lower alkyl or lower alkenyl,

R_3 represents a group of the formula a, b, c, or d



a b c d

wherein R is hydrogen or C_1–C_3-alkyl, R_4 is hydrogen, lower alkyl, lower alkoxy, nitro or halogen, and R_4' is hydrogen or C_1–C_4-alkyl, and the phenylene group A and the phenyl group B independently from each other each may be unsubstituted or be substituted by 1 to 3 substituents selected from the group consisting of halogen, lower alkylthio, lower alkoxy, lower alkyl, hydroxy, nitro and trifluoromethyl, or be substituted at two adjacent carbon atoms by methylenedioxy or ethylenedioxy, and optical isomers and pharmaceutically-acceptable acid addition salts thereof.

20. A method of treating pain disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim **1**.

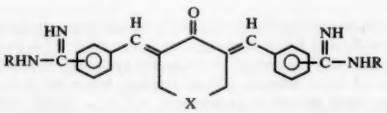
4,325,958

BIS-AMIDINE KETONES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 5, 1981, Ser. No. 270,774
Int. Cl.³ A61K *31/35, 31/38;* **C07D** *309/38, 335/02*
U.S. Cl. 424—267 **10 Claims**

1. A compound of the structure



wherein X is S, SO_2, O or NR^1, R is H, lower alkyl or aryl, and R^1 is H, lower alkyl, lower alkanoyl, aroyl or aryl-lower alkyl, or acid-addition salts thereof.

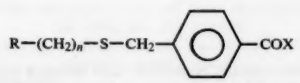
4,325,959

HYPOGLYCEMIC 4-(((1,3,4 THIADIAZOLYL) THIO)METHYLBENZOIC ACIDS, ESTERS AND AMIDES

Donald P. Matthews, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1979, Ser. No. 65,390
Int. Cl.³ A61K *31/425;* **C07D** *285/12*
U.S. Cl. 424—270 **23 Claims**

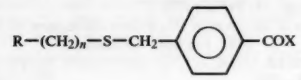
1. A compound of the formula:



wherein R represents a substituted or unsubstituted 1,3,4-thiadiazolyl group the optional substitution on the 1,3,4-thiadiazolyl group being selected from lower alkyl, halo, or hydroxy; X represents amino or an $—OR^1$ moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the inte-

ger 0, 1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

8. A method for treating hyperglycemia in a mammal which comprises administering internally to a mammal an effective hypoglycemic amount of a compound of the formula:



wherein R represents a substituted or unsubstituted 1,3,4-thiadiazolyl group the optional substitution on the 1,3,4-thiadiazolyl group being selected from a lower alkyl, halo, or hydroxy; X represents amino or an —OR^1 moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the integer 0, 1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

4,325,960

6-AMIDINOPENICILLANIC ACID DERIVATIVES INCLUDING THE RADICAL OF A β-LACTAMASE INHIBITOR

Wagn O. Godtfredsen, Vaerlose, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

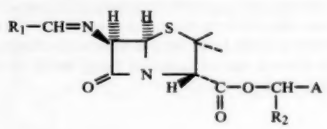
Filed Jan. 29, 1980, Ser. No. 116,651

Claims priority, application United Kingdom, Feb. 13, 1979, 05021/79; Jun. 19, 1979, 21342/79

Int. Cl.[3] **C07D** *499/80*

U.S. Cl. 424—270 **25 Claims**

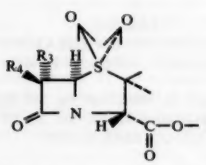
1. A compound of formula I



I

in which R_1 stands for a five- to ten-membered azacycloalkyl or azabicycloalkyl residue attached via the nitrogen atom and optionally being substituted by one or two, the same or different, lower alkyl groups; R_2 represents a hydrogen atom or a lower alkyl, phenyl or phenylalkyl radical; A represents a radical selected from the group consisting of

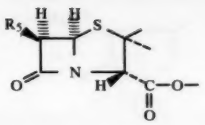
(a) a radical of the formula II:



II

in which R_3 stands for a hydrogen or a halogen atom; R_4 is a hydrogen atom or an amino or acylamino group, and where at least one of R_3 and R_4 is hydrogen;

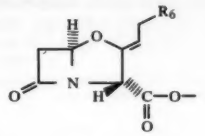
(b) a radical of the formula III:



III

in which R_5 stands for a halogen atom; and

(c) a radical of the formula IV:



IV

in which R_6 stands for a hydroxyl group or formula IV represents one of the radicals of known clavulanic acid derivatives with β-lactamase inhibitory activity;

and salts thereof with pharmaceutically acceptable, non-toxic acids.

4,325,961

FLUORINATED AMINO ACIDS

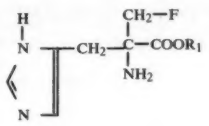
Janos Kollonitsch, Westfield, and Arthur A. Patchett, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 1, 1977, Ser. No. 802,391

Int. Cl.[3] **A61K** *31/415;* **C07D** *233/64*

U.S. Cl. 424—273 R **7 Claims**

1. A compound of the formula



wherein

R_1 is H or C_1–C_{18} alkyl.

4. A pharmaceutical composition for treating gastric leasions containing an effective amount of a compound of claim **1** or an acid addition salt thereof and a diluent.

4,325,962

PHARMACEUTICAL COMPOSITIONS COMPRISING A PYRAZOLE DERIVATIVE AND METHOD OF USE

Georg Rainer, Konstanz, Fed. Rep. of Germany, assignor to Byk-Gulden Lomberg Chemische Fabrik GmbH, Fed. Rep. of Germany

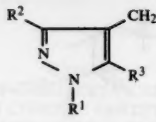
Division of Ser. No. 72,233, Sep. 14, 1970, Pat. No. 4,146,721. This application Dec. 15, 1978, Ser. No. 969,872

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1969, 1946370

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 P **41 Claims**

26. An anti-inflammatory, analgesic or antipyretic drug composition comprising a mixture of at least one pharmaceutically acceptable carrier and in an amount effective to provide anti-inflammatory, analgesic or antipyretic action, at least one pyrazol-4-acetic acid derivative of the formula



wherein R^1 is phenyl, R^2 is phenyl, p-halogenophenyl, p-methylphenyl, R^3 is hydrogen or phenyl and A is —COOH or —$COOR^5$ wherein R^5 is alkyl of 1 to 4 carbon atoms, or a salt of the acid with a pharmocologically acceptable base.

4,325,963

THIENOPYRROLONE SUBSTITUTED BENEZENESULFONYLUREAS AND THEIR USE

Volker Hitzel, Hofheim am Taunus; Rudi Weyer, Kelkheim; Karl Geisen, Frankfurt am Main, and Günter Regitz, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

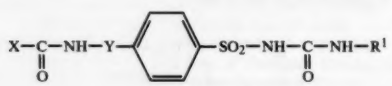
Filed Dec. 17, 1980, Ser. No. 217,526

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951060

Int. Cl.³ A61K *31/64;* **C07D** *495/04*

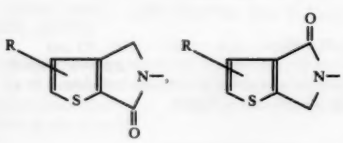
U.S. Cl. 424—274 **9 Claims**

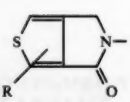
1. Sulfonylureas of the formula



wherein

X is





with R being hydrogen or halogen,

Y is alkylene with 2–3 C-atoms,

R is alkyl with 3 to 8 C-atoms, cycloalkyl, alkylcycloalkyl, dialkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylcycloalkenyl, with 5–9 C-atoms each, methylcyclopentylmethyl, cyclohexenylmethyl, chlorocyclohexyl, methoxycyclohexyl, bicycloheptyl, bicycloheptenyl, bicycloheptylmethyl, bicycloheptenylmethyl, bicyclooctyl, nortricyclyl, adamantyl or benzyl and their physiologically tolerated salts.

9. Process for lowering the blood sugar level in the treatment of diabetes by administering an effective amount of a compound according to claim **1**.

4,325,964

PHENYLAMIDINE DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Continuation of Ser. No. 877,963, Feb. 15, 1978, abandoned. This application Dec. 27, 1979, Ser. No. 107,609

Claims priority, application United Kingdom, Feb. 15, 1977, 06298/77; Apr. 21, 1977, 16705/77

The portion of the term of this patent subsequent to Mar. 27, 1996, has been disclaimed.

Int. Cl.³ A61K *31/36, 31/155, 31/19;* **C07C** *83/10, 123/00*

U.S. Cl. 424—282 **24 Claims**

1. A chemical compound selected from the group consisting of:

I. The following acetamido oximes and the non-toxic acid addition salts thereof:

2-(4-fluoro-anilino)-acetamidoxime,
2-(2-bromo-anilino)-acetamidoxime,
2-(3,4-dichloro-anilino-acetamidoxime,
2-(4-chlorobenzylmercapto)-acetamidoxime,
2-(3-chloro-anilino)-acetamidoxime,
2-(4-methyl-anilino)-acetamidoxime,
2-(3-methyl-anilino)-acetamidoxime,
2-(2-fluoro-anilino)-acetamidoxime,
2-(4-methoxy-anilino)-acetamidoxime,
2-(2-methoxy-anilino)-acetamidoxime,
2-(2-chloro-anilino)-acetamidoxime; and

II. The following hydroxamic acids and the non-toxic metallic salts thereof:

2-(4-chlorobenzylmercapto)-acetohydroxamic acid,
2-(3,4-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(4-chlorobenzylmercapto)-propionohydroxamic acid,
d-naphthylmethylenemercapto-acetohydroxamic acid,
2-(4-fluorobenzylmercapto)-acetohydroxamic acid,
2-(4-methoxybenzylmercapto)-acetohydroxamic acid,
2-(2,4-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(2,6-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(4-nitrobenzylmercapto)-acetohydroxamic acid,
2-(3,4-methylenedioxybenzylmercapto)-acetohydroxamic acid,
2(3,4-dimethoxybenzylmercapto)-acetohydroxamic acid.

24. A therapeutic composition comprising a physiologically acceptable excipient and a pharmaceutically effective amount of a compound selected from the group consisting of the compounds set forth in claim **1** and the non-toxic acid addition and metallic salts thereof, said composition being useful for sedative and anxiolytic purposes.

4,325,965

AGENT FOR PREVENTING OR TREATING PSORIASIS

Ryoichi Chiba, Tokyo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,560

Claims priority, application Japan, Oct. 22, 1979, 54/135136

Int. Cl.³ A61K *31/355*

U.S. Cl. 424—284 **5 Claims**

1. A method for treating psoriasis which comprises topically applying to a patient affected with psoriasis a composition including as the principal active ingredient, an effective amount of δ-tocopherol, dispersed or dissolved in a pharmaceutically acceptable topical carrier.

4,325,966
FUNGICIDAL COMPOUNDS, COMPOSITIONS AND PROCESSES

Nazim Punja, Crowthorne, England, assignor to Imperial Chemical Industries Limited, London, England

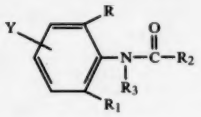
Filed Apr. 27, 1979, Ser. No. 34,134

Claims priority, application United Kingdom, May 15, 1978, 19566/78; Jun. 22, 1978, 27613/78; Dec. 18, 1978, 48901/78; Dec. 18, 1978, 48975/78; Mar. 19, 1979, 09485/79

Int. Cl.[3] **A01N** *37/22, 43/08;* **C07C** *103/365;* **C07D** *307/68*

U.S. Cl. 424—285 **9 Claims**

1. A fungicidal acylanilide derivative having the formula:



wherein R and R_1 are halogen atoms or lower alkyl groups; R_2 is a furyl or alkoxyalkyl group; and R_3 is an alkenyl or propargyl group optionally substituted with halogen atoms or alkyl, haloalkyl, alkoxy, alkoxycarbonyl or aryl groups; and Y is one or more hydrogen or halogen atoms, or alkyl groups.

8. A process for combating pests, especially plant fungi and plant bacteria, which comprises applying to plants or seeds, or to their loci, an acylanilide derivative as defined in claim **1**.

4,325,967
CYCLOPENTANE DERIVATIVES

Michael P. L. Caton, Upminster; Edward C. J. Coffee, London, both of England, and Gordon L. Watkins, Santa Monica, Calif., assignors to May & Baker Limited, Essex, England

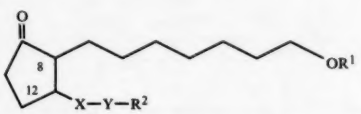
Division of Ser. No. 835,723, Sep. 22, 1977, Pat. No. 4,183,870, which is a division of Ser. No. 543,552, Jan. 23, 1975, Pat. No. 4,088,695. This application May 7, 1979, Ser. No. 36,644

Claims priority, application United Kingdom, Jan. 26, 1974, 3730/74

Int. Cl.[3] **A61K** *31/12, 31/22, 31/235;* **C07C** *49/723, 49/743, 49/753, 69/003, 69/007, 69/16, 69/78*

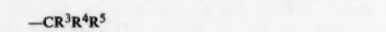
U.S. Cl. 424—299 **16 Claims**

1. A cyclopentane derivative of the formula:



I

wherein R^1 represents hydrogen, alkanoyl of 1 through 4 carbon atoms or benzoyl, R^2 represents a group of the formula:



II

(wherein R^3 and R^4 each represent hydrogen or alkyl of 1 through 4 carbon atoms, and R^5 represents hydrogen or alkyl of 1 through 10 carbon atoms, alkoxy of 1 through 10 carbon atoms, cycloalkyl of 5 through 7 carbon atoms or adamantyl, or R^5 represents alkyl of 1 through 6 carbon atoms substituted by alkoxy of 1 through 6 carbon atoms, by cycloalkyl of 5 through 7 carbon atoms or by adamantyl, or the group $—CR^3R^4R^5$ together forms cycloalkyl of 5 through 7 carbon atoms or adamantyl), X represents trans-vinylene or ethylene, and Y represents carbonyl or a group of the formula:

III

wherein R^6 represents hydrogen or alkyl of 1 through 4 carbon atoms, and R^7 represents hydrogen, alkanoyl of 1 through 4 carbon atoms or benzoyl.

4,325,968
BENZENETHIOCARBAMATE DERIVATIVES

Taizo Nakagawa, Ageo; Yutaka Watanabe, Saitama; Kaoru Ohmori, Okegawa; Kengo Koike, Ageo, and Iwao Tejima, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

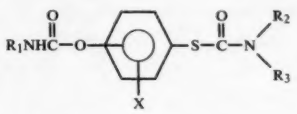
Filed Jan. 5, 1981, Ser. No. 222,572

Claims priority, application Japan, Jan. 23, 1980, 55-5664

Int. Cl.[3] **A01N** *47/10;* **C07C** *155/02*

U.S. Cl. 424—300 **17 Claims**

1. A compound represented by the formula:



(1)

wherein R_1 is alkyl having 1 to 4 carbon atoms, R_2 is hydrogen or alkyl having 1 to 4 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or alkylsulfonyloxy having 1 to 4 carbon atoms.

4,325,969
CYANOVINYL PYRETHROIDS AND PESTICIDAL USE THEREOF

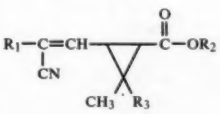
Dale G. Brown, Hopewell, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 937,360, Aug. 28, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,153

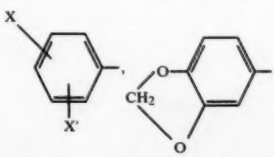
Int. Cl.[3] **A01N** *31/14, 43/16;* **C07C** *121/50, 121/60*

U.S. Cl. 424—304 **23 Claims**

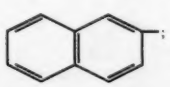
1. A compound of the formula:



wherein R_1 is

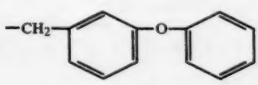


or



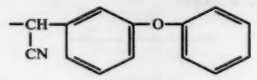
;

R_2 is



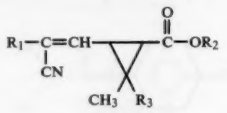
or

-continued

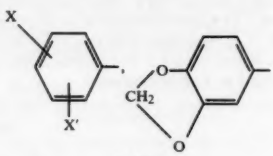


R_3 is hydrogen or methyl; and X and X' are each hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or haloalkyl C_1–C_3.

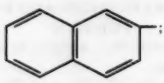
12. A method for the control of insect pests of agriculturally important crops or ectoparasites of domesticated warm-blooded animals comprising contacting the insects, ectoparasites or applying to their hosts and to their habitat an insecticidally or ectoparasiticidally effective amount of a compound of the formula:



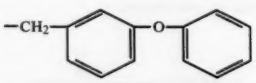
wherein R_1 is



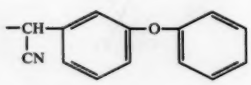
or



R_2 is a moiety



or



R_3 is hydrogen or methyl; and X and X' are each hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or haloalkyl C_{1-C2}.

4,325,970

15-ACETYL-PROSTAGLANDINS

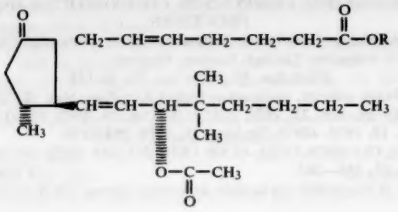
George W. Holland; Perry Rosen, both of North Caldwell, and Hugo Gallo-Torres, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 9, 1980, Ser. No. 195,576

Int. Cl.³ C07C *177/00*; A61K *31/557*

U.S. Cl. 424—311 **19 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl or pharmaceutically acceptable salts thereof.

4,325,971

METOCLOPRAMIDE/PARACETAMOL TABLETS

Robert H. Poyser, Old Harlow, and David H. Turner, London, both of England, assignors to Beecham Group Limited, England

Filed Nov. 15, 1979, Ser. No. 94,503

Claims priority, application United Kingdom, Nov. 16, 1978, 44842/78

Int. Cl.³ A61K *31/165, 31/615*

U.S. Cl. 424—324 **5 Claims**

1. An analgesic tablet, which comprises an effective amount of paracetamol in combination with metoclopramide or an acid addition salt thereof, the weight ratio of paracetamol to metoclopramide or acid addition salt thereof being from 80:1 to 120:1, respectively.

4,325,972

PERFLUORINATED N,N-DIMETHYL CYCLOHEXYLMETHYLAMINE EMULSIONS

Robert P. Geyer, Brookline, Mass., and Frederick L. Herman, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 153,235, May 27, 1980. This application Jun. 30, 1981, Ser. No. 278,934

Int. Cl.³ A61K *31/13*

U.S. Cl. 424—325 **7 Claims**

1. A synthetic blood composition comprising a mammalian blood substitute aqueous emulsion containing an effective amount of perfluoro-N,N-dimethylcyclohexylmethylamine.

4,325,973

HYDROXYALKYL AMIDES AS FUNGICIDES TO EUMYCOTINA IN PHANEROGAMIA PLANT LIFE

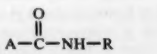
David E. Graham, Westfield, N.J., and Joseph P. Copes, deceased, late of Easton, Pa. (by Anna M. Copes, legal representative), assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 758,585, Jan. 12, 1977, abandoned. This application Jul. 21, 1980, Ser. No. 170,446

Int. Cl.³ A01N *37/18*

U.S. Cl. 424—320 **10 Claims**

1. A process for the control of Eumycotina fungi which comprises applying to a plant a fungicidal amount of one or more amide fungicides having the formula:



wherein A is hydroxyalkyl containing from 2 to 14 carbon atoms and is and wherein R is an organic radical of from 4 to 20 carbon atoms and is selected from the group consisting of an acyclic alkyl radical, an alkenyl radical having one or more doubly bonded carbon atoms and a mono on di-fluoxinated benzyl radical.

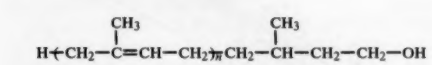
4,325,974

β, γ-DIHYDROPOLYPRENYL ALCOHOL AND HYPOTENSIVE PHARMACEUTICAL COMPOSITION CONTAINING SAME

Isao Yamatsu, Kawaguchi; Shinya Abe; Yuichi Inai, both of Tokyo; Toshiji Igarashi, Tokorozawa, and Yoshikage Nakajima, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,355
Claims priority, application Japan, Dec. 1, 1978, 53-147858
Int. Cl.[3] A61K *31/045*; C07C *29/136, 33/02*
U.S. Cl. 424—343 11 Claims

1. A compound having the formula:



wherein n is an integer of 8 to 10.

5. A pharmaceutical composition for treating hypertension and hepatic disease comprising a therapeutically effective amount of a compound as claimed in claim 1, in association with a pharmaceutically acceptable carrier, diluent or vehicle.

4,325,975

MINERALIZED DRINKING WATER AND METHOD OF MAKING SAME

John A. Lindon, 255 S. Beverly Glen Blvd., Los Angeles, Calif. 90024, and Arthur Malin, 606 N. Foothill Rd., Beverly Hills, Calif. 90210

Continuation-in-part of Ser. No. 108,538, Dec. 31, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,472
Int. Cl.[3] A23L *2/00*
U.S. Cl. 426—66 10 Claims

1. A sodium and potassium free mineralized drinking water formulation which consists essentially of an aqueous solution of distilled water containing:

20–40 mg/liter Strontium ions;
50–100 mg/liter Magnesium ions;
60–125 mg/liter Calcium ions; and
0.06–0.15 mg/liter Lithium ions,

each of said ions being present in association with water-soluble salts.

4,325,976

REFORMED RICE PRODUCT

Alastair D. Harrow, Rushden, and John W. Martin, Oakley, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Mar. 18, 1980, Ser. No. 131,331
Claims priority, application United Kingdom, Mar. 22, 1979, 10180/79
Int. Cl.[3] A21D *2/00, 10/00*; A23L *1/10*
U.S. Cl. 426—104 19 Claims

1. A dry composition for use in the production of a reformed rice product, which comprises:

(a) a mixture of pregelatinised and ungelatinised flour in which the proportion of the pregelatinised flour is from 30% to 70% by weight of the mixture and in which the flour is at least partly rice flour,
(b) at least 3.0% sodium chloride by weight of the composition, and
(c) an amount up to 10% of fat in powder form by weight of the composition.

4,325,977

BLAND WHEY PRODUCT AND PROCESS OF PREPARATION

Robert K. Remer, Evanston, Ill., assignor to Hull-Smith Chemicals, Inc., Oak Brook, Ill.

Continuation of Ser. No. 933,173, Aug. 14, 1978, Pat. No. 4,235,937. This application Aug. 1, 1980, Ser. No. 174,658
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] A23C *21/00, 21/08*
U.S. Cl. 426—534 24 Claims

1. A process for treating whey, comprising:

subjecting whey to blending shear forces, said blending step being conducted above a predetermined temperature;
incorporating a blandness imparting component into said whey during said blending step to give the whey a bland odor and taste, said blandness imparting component including a metal gluconate; and
adding a colloid enhancer component to said whey during said blending step to impart a colloidal-type condition to said whey.

4,325,978

PROCESS FOR IMPARTING BLANDNESS TO CHEESE

Robert K. Remer, Evanston, Ill., assignor to Hull-Smith Chemicals, Inc., Oak Brook, Ill.

Division of Ser. No. 933,173, Aug. 14, 1978, Pat. No. 4,235,937. This application Jul. 28, 1980, Ser. No. 172,993
Int. Cl.[3] A23C *19/06*
U.S. Cl. 426—534 4 Claims

1. A process for treating a protein source, comprising: providing a supply of cheese as produced with residual whey thereon, adding a blandness imparting component to a final rinsing water, and rinsing said supply of cheese with said final rinsing water including said blandness imparting component, said blandness imparting component being selected from the group consisting of iron gluconate, copper gluconate, and blends thereof.

4,325,979

POWDERED COMPOSITIONS FOR CREAM TOPPINGS

Moshe Trop, and Avinoam Livne, both of Beer Sheva, Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Sep. 24, 1980, Ser. No. 190,133
Claims priority, application Israel, Sep. 28, 1979, 58363
Int. Cl.[3] A23J *3/02*
U.S. Cl. 426—570 16 Claims

1. A powdered composition, suitable for mixing with a liquid to obtain a cream topping, comprising, by weight proportions, about 30 to about 45 parts of a vegetable lipid whipping agent, about 5 to 15 parts whole milk powder, about 3 to 5 parts sodium caseinate and about 30 to 60 parts sugar, wherein said lipid whipping agent comprises about 15 to 35% of sugar or corn syrup solids, about 6 to 11% sodium caseinate and about 50 to 70% of a lipid component, which lipid component comprises about 75 to 85% partially hydrogenated vegetable oil, about 10 to 12% lactylated fatty acid esters of a polyalcohol and about 8 to 10% of fatty acid mono or diglycerides or mixture of said mono and digylcerides.

4,325,980

PROCESS FOR PRODUCING A MARGARINE HAVING A REDUCED TENDENCY TO SPATTERING

Johannes H. M. Rek, Vlaardingen, Netherlands, and Pieter M. J. Holemans, Ekeren, Belgium, assignors to Lever Brothers Company, New York, N.Y.

PCT No. PCT/EP79/00101, § 371 Date Aug. 14, 1980, § 102(e) Date Aug. 14, 1980, PCT Pub. No. WO80/01232, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 18, 1979, Ser. No. 205,370

Claims priority, application Netherlands, Dec. 20, 1978, 7812335

Int. Cl.[3] A23D *3/02*

U.S. Cl. 426—604 9 Claims

1. A process for producing a water-in-oil emulsion of the margarine-type having an oil phase and an aqueous phase, said emulsion displaying a reduced tendency to spattering, wherein the oil phase and the aqueous phase are mixed and worked to produce a margarine, comprising adding at least 0.025% by weight of a hydrophilic finely divided metal oxide or hydrophilic finely divided metalloid oxide or mixtures thereof and at least 0.01% by weight of phosphatide to said oil phase, said oil phase consisting essentially of a fat or fat blend having a slip melting point of 30°–40° C., wherein said phosphatide and said hydrophilic metal oxide or said hydrophilic metalloid oxide or mixtures thereof are added separately to said oil phase to prevent interacting prior to introduction into said oil phase.

4,325,981

METHOD OF PREVENTING COLOR ACCURATE REPRODUCTIONS USING COLOR PHOTOCOPIERS AND THE LIKE

Takeo Sugiura, Saitama; Keiji Miyajima, Chiba; Hideo Nagatomo, and Kiyoshi Masui, both of Saitama, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Division of Ser. No. 16,721, Mar. 2, 1979, Pat. No. 4,277,514. This application Oct. 30, 1980, Ser. No. 202,158

Claims priority, application Japan, Mar. 7, 1978, 53/25662; Dec. 18, 1978, 53/158227

Int. Cl.[3] B41M *3/14;* B44F *1/12*

U.S. Cl. 427—7 6 Claims

1. A method of preventing color accurate reproduction of a colored pattern with color photocopiers and color photography using photosensitive materials having spectral sensitivity in the wavelength ranges consisting of the human visible range and adjacent wavelength ranges thereto, comprising, forming at least a portion of the colored pattern with a color material having a spectral reflection factor curve with high spectral reflection in at least one of the areas of wavelength below 450 nm and above 650 nm so that a reproduction of the colored pattern is in a color not perceived by a direct human viewer of the colored pattern, and forming said at least one portion of the colored pattern with a color material having a spectral reflection factor curve with high spectral reflection in at least one area between 450 nm and 650 nm whereby said at least one portion of the colored pattern is viewed in a viewing color different from a reproduced color reproduced by the color photocopiers and color photography, said colored pattern being formed with said color material having a spectral reflection factor curve with high spectral reflection factors in at least one of the areas of wavelength below 450 nm and also above 650 nm and in at least one area between 450 nm and 650 nm and a color material having the same hue as that of the viewing color but scarcely having any reflection factor in the areas of wavelength below 450 nm and above 650 nm, whereby a human viewer identifies said colored pattern as a uniform hue but identifies the reproduction of the same as a combination of different hues.

4,325,982

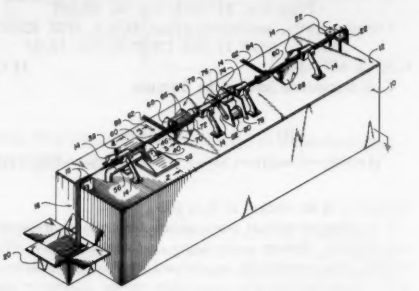
ZIPPER CHAIN COATER

Donald J. Gillette, Guilford; Bedrich Hajek, New Haven, and David Seales, East Haven, all of Conn., assignors to Electrostatic Equipment Corporation, New Haven, Conn.

Filed Apr. 23, 1980, Ser. No. 143,115

Int. Cl.[3] B05D *1/04, 1/28*

U.S. Cl. 427—32 18 Claims



1. A method of continuously producing smooth, adherent coatings upon the teeth of a zipper chain, comprising the steps of:

a. continuously moving a zipper chain along a travel path, said chain being comprised of a fabric web and a multiplicity of metal teeth affixed thereto;

b. generating a cloud of electrostatically charged particles of a heat fusible powder;

c. depositing said particles upon said moving chain in areas substantially limited to the surfaces of said teeth;

d. heating said moving coated chain only in said limited areas by generating heat within said teeth, to effect fusion and at least initial cohesion of said deposited particles;

e. removing from said moving chain inadequately adhered particles; and

f. reheating said limited areas of said moving chain, to effect final cohesion of said particles and to produce, upon cooling of said chain, a smooth, adherent coating thereof on said teeth.

4,325,983

CATALYTIC PROMOTERS IN ELECTROLESS PLATING CATALYSTS ADDED PRIOR TO A COLLOIDAL NUCLEATION PROCESS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 833,905, Sep. 16, 1977, Pat. No. 4,151,311, which is a continuation-in-part of Ser. No. 651,507, Jan. 22, 1976, abandoned. This application Mar. 29, 1979, Ser. No. 24,892

Int. Cl.[3] C23C *3/02;* H05K *3/18*

U.S. Cl. 427—98 22 Claims

1. A process for electroless metal deposition onto a non-conductor surface (1) contacting said surface with a colloidal catalytic composition comprising the admixture of a principal catalytic agent wherein said principal catalytic agent is a compound of a metal selected from the groups of metals consisting of copper, nickel, cobalt, and iron and mixtures thereof and a catalytic promoter agent wherein said catalytic promoter agent is a compound of a metal selected from the group of metals consisting of Mg, Ca, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Tc and Re and mixtures thereof and further said catalytic promoter is added prior to the colloidal nucleation process in which the principal catalytic agent is allowed to react as to yield a colloid, and further wherein the concentrations for the principal catalytic agent and the catalytic promoter agent are so adjusted as to yield a catalytic composition having a greater catalytic activity for electroless metal deposition in comparison to the same catalytic composition in the absence of said catalytic promoter agent, and (2) contacting the treated non-

conductor with a compatible electroless plating bath to deposit a metallic layer.

4,325,984

PLASMA PASSIVATION TECHNIQUE FOR THE PREVENTION OF POST-ETCH CORROSION OF PLASMA-ETCHED ALUMINUM FILMS

Christopher H. Galfo, San Jose, and Ashok L. Nalamwar, Milpitas, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jul. 28, 1980, Ser. No. 172,745
Int. Cl.³ B05D *3/04, 3/06*
U.S. Cl. 427—38 **9 Claims**

1. A method for preventing the post-etch corrosion of aluminum or aluminum-alloy film which has been etched utilizing chlorinated plasma comprising exposing the etched film to sulfur hexafluoride plasma.

2. A method for preventing the post-etch corrosion of aluminum or aluminum alloy film which has been etched in a reaction chamber containing chlorinated plasma comprising:

a. evacuating the reaction chamber of chlorinated plasma;

b. while maintaining a vacuum in the reaction chamber, introducing fluorinated gas to the chamber;

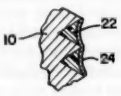
c. applying suitable RF power to the chamber to generate a fluorinated plasma for passivation of the etched aluminum film.

4,325,985

THREAD LOCK

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 135,504, Mar. 31, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 191,948
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **32 Claims**



1. The method of producing an externally threaded article provided with thread locking means adapted to oppose separation from a mating threaded article, which comprises depositing a fluid lock-forming material on a threaded surface of the article to cause the fluid material to be received in thread grooves and to fill the bottoms of the thread grooves, the fluid material comprising an uncured fluid resin capable of polymerization to a solid state acting between confronting thread surfaces of a threadedly engaged mating article, applying a light coating of a fluid radiation-curable film-forming material over the deposit and subjecting the coating to radiation for a few seconds to cure the coating to a thin, dry, solid, non-tacky protective film over the still-fluid deposit to permit random association of the article with like articles without sticking together.

4,325,986

METHOD FOR CONTINUOUS DEPOSITION BY VACUUM EVAPORATION

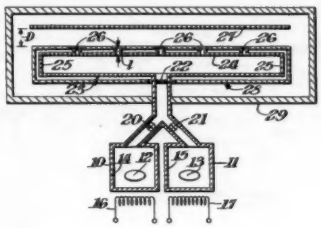
Bill N. Baron; Richard E. Rocheleau, and T. W. Fraser Russell, all of Newark, Del., assignors to University of Delaware, Newark, Del.

Filed May 29, 1979, Ser. No. 43,317
Int. Cl.³ C23C *13/02, 13/04*
U.S. Cl. 427—74 **26 Claims**

16. A method for depositing material on a continuously moving substrate comprising steps of:

heating said material to the vapor state in a substantially enclosed evaporation chamber;

conveying said material from said evaporation chamber to a manifold chamber through a restricted diameter rate controlling orifice between said evaporation chamber and said manifold chamber with said manifold chamber being in communication with a vacuum coating chamber;



conveying said material out of said manifold chamber through a plurality of nozzles in a spaced array and from said nozzles into said vacuum chamber; and

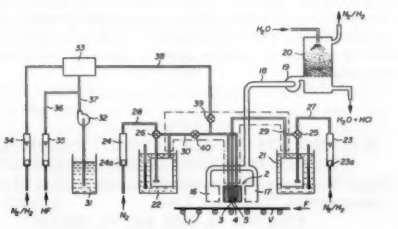
passing said substrate in said vacuum chamber adjacent to and spaced from said nozzles to deposit said material on said continuously moving substrate.

4,325,987

PROCESS FOR THE PRODUCTION OF AN ELECTRICALLY CONDUCTING ARTICLE

Reinhard Kalbskopf, Onex, and Otto Baumberger, Carouge, both of Switzerland, assignors to Societa Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Division of Ser. No. 173,806, Jul. 30, 1980. This application Jan. 8, 1981, Ser. No. 223,263
Claims priority, application Switzerland, Jul. 31, 1979, 7033/79
Int. Cl.³ C03C *17/245*
U.S. Cl. 427—110 **8 Claims**



1. A process for forming on a mineral substrate an adherent coating of stannic oxide having a resistivity below $10^{-2}\Omega$ cm, comprising heating the substrate to at least 500° C. and reacting on the heated substrate's surface a volatile tin compound and water vapor diluted in a carrier gas containing at least 30% hydrogen, thereby depositing said coating on said substrate.

4,325,988

DEPOSITION OF COATINGS FROM FINE POWDER REACTANTS

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

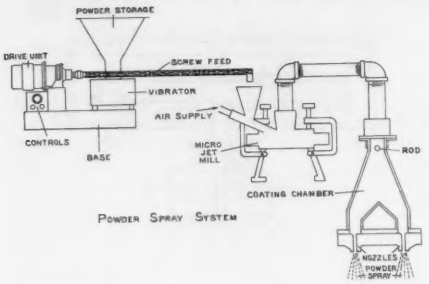
Filed Aug. 8, 1980, Ser. No. 176,323
Int. Cl.³ C03C *17/23*
U.S. Cl. 427—160 **8 Claims**

1. In a method for coating a substrate by contacting the

surface of the substrate with a powder coating reactant, which comprises the steps of:

a. dispersing the powder coating reactant into a stream of carrier gas;

b. conveying the reactant/gas mixture to a coating chamber; and



POWDER SPRAY SYSTEM

c. delivering the reactant/gas mixture to the surface to be coated; the improvement which comprises reducing the powder coating reactant to a fine dust having an average particle size less than about 10 microns and passing the dust/gas mixture over a bar at the entrance of the coating chamber to create a swirling smoke.

4,325,989

SEAMABLE UNCURED CHLOROSULFONATED POLYETHYLENE

Wolfgang Honsberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 27, 1980, Ser. No. 181,728

Int. Cl.³ B05D *7/04*

U.S. Cl. 427—160 **7 Claims**

1. A process for retaining seamability of a sheet of uncured chlorosulfonated polyethylene which comprises applying from about 0.3–4 mg/sq cm of an ultraviolet light absorber dissolved in an organic solvent to the surface of a sheet of uncured chlorosulfonated polyethylene having from about 20–30% by weight chlorine and from about 0.7–1.4% by weight sulfur that is to be seamed to another sheet of uncured chlorosulfonated polyethylene.

4,325,990

ELECTROLESS COPPER DEPOSITION SOLUTIONS WITH HYPOPHOSPHITE REDUCING AGENT

Donald R. Ferrier, Thomaston, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

Filed May 12, 1980, Ser. No. 149,236

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—305 **10 Claims**

1. An electroless copper deposition solution comprising, in addition to water, a soluble source of cupric ions, a complexing agent effective to maintain said cupric ions in solution at pH levels below 5.0, and a reducing agent effective to reduce cupric ions to copper as a deposited conductive metal film on a catalyzed non-conductive surface of a substrate when in contact with said solution, wherein said reducing agent is a soluble source of hypophosphite ions; said solution having a pH of from about 2.0 to 3.5 and said complexing agent being selected to be effective for coordination with said cupric ions within that range to prevent their precipitation from said solution, wherein said solution is free of significant concentrations of anions which would interfere if present with the reduction of the cupric ions by said hypophosphite reducing agent to produce said conductive copper film on a catalyzed surface of a substrate placed in contact with said solution.

4,325,991

ELECTROLESS PLATING OF POLYESTERS

Lawrence P. Donovan, III, Monrovia; Eileen Maguire, Arcadia, and David A. Dillard, Diamond Bar, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.

Filed Jan. 5, 1981, Ser. No. 222,592

Int. Cl.³ C23C *3/02;* **B29C** *17/08*

U.S. Cl. 427—307 **48 Claims**

1. A process for preparing the surface of filled polyester substrates for electroless plating which comprises:

(a) forming a conditioned filled polyester substrate by contacting the filled polyester substrate with an alkaline conditioner having a pH of at least about 8 and maintained at a temperature from about 135° F. to the lesser of the boiling point of the solution and the softening temperature of the filled polyester substrate for a time sufficient to render the substrate receptive to etch by an acid fluoride etch solution; and

(b) etching the conditioned filled polyester substrate by contact with an aqueous acid fluoride etch solution having a pH less than about 5 and containing fluoride in concentration of from about 1 mole per liter of solution to solution saturation as provided by at least one soluble fluoride compound for a time sufficient to etch the surface of the filled polyester substrate and increase adhesion of an electrolessly deposited metal thereto.

4,325,992

ELECTROLESS PLATING OF POLYCARBONATES

Lawrence P. Donovan, III, Monrovia; Eileen Maguire, Arcadia, and David A. Dillard, Diamond Bar, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.

Filed Jan. 5, 1981, Ser. No. 222,591

Int. Cl.³ C23C *3/02;* **B29C** *17/08*

U.S. Cl. 427—307 **35 Claims**

1. A process for preparing the surface of filled polycarbonate resin substrate for electroless plating which comprises:

(a) forming a conditioned filled polycarbonate resin substrate by contacting the filled polycarbonate resin substrate with an alkaline conditioner having a pH of at least about 8 and maintained at a temperature from about 135° F. to the lesser of the boiling point of the solution and the softening temperature of the filled polycarbonate resin substrate for a time sufficient to render the substrate receptive to etch by an acid fluoride etch solution; and

(b) etching the conditioned filled polycarbonate resin substrate by contact with an aqueous acid fluoride etch solution having a pH less than about 5 and containing fluoride in concentration of from about 1 mole per liter of solution to solution saturation as provided by at least one soluble fluoride compound for a time sufficient to etch the surface of the filled polycarbonate resin substrate and increase adhesion of an electrolessly deposited metal thereto.

4,325,993

WOOD PRESERVATION PROCESS

John G. Schroder, 43 Griffith Ave., Roseville, N.S.W., Australia (2069)

Filed Nov. 21, 1979, Ser. No. 96,412

Claims priority, application Australia, Nov. 27, 1978, PD6917; May 24, 1979, PD8934; May 30, 1979, PD9010; Jul. 12, 1979, PD9565

Int. Cl.³ B05D *1/18, 3/02, 3/12*

U.S. Cl. 427—315 **11 Claims**

1. A process for preserving wood comprising the steps of:

providing a solution containing copper ions, arsenic acid ions and chromic acid ions, the ratio of copper to arsenic being such as to establish acid copper arsenate equilibrium at a pH of less than 2.8 and at a temperature greater than 40° C.,

said solution having a sufficient concentration of chromic acid ions to establish tertiary chromium arsenate equilib-

rium, and to provide a ratio of chromium to arsenic which will ensure that substantially all arsenic is precipitated and fixed as tertiary chromium arsenate when the pH rises to about 2.8,

placing the wood in a bath of the solution and heating acid bath to maintain the temperature of the wood above at least about 40° C. for a time sufficient to ensure that the copper ions, arsenic acid ions and chromic acid ions diffuse through the wood whereby the pH of the aqueous phase within the wood falls below 2.8 and acid copper arsenate equilibrium is established,

cooling the bath and the wood to below about 40° C. so that the chromic acid ions adsorb onto the cells of the wood whereby the pH of the aqueous phase of the wood rises causing (a) substantially all of the chromium to be precipitated and fixed within the wood as tertiary chromium arsenate when the pH rises to about 2.8, and (b) basic copper arsenate to be precipitated and fixed within the wood when the pH rises to about 3.2, the concentration of the chromic acid in said aqueous phase being such that the pH of said aqueous phase remains below 4 until the aforesaid precipitation and fixation reactions are substantially completed, thereby preventing formation of chromates within and on the surface of the wood.

4,325,994

COATING METAL FOR PREVENTING THE CREVICE CORROSION OF AUSTENITIC STAINLESS STEEL AND METHOD OF PREVENTING CREVICE CORROSION USING SUCH METAL

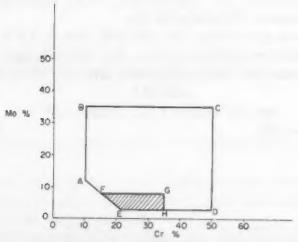
Nobumitsu Kitashima, Chigasaki; Norio Takahashi, Yamato; Juichi Ishiguro, Kanagawa, and Satoshi Kawamura, Chigasaki, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,684

Claims priority, application Japan, Dec. 29, 1979, 55-194; Dec. 29, 1979, 55-195; Dec. 29, 1979, 55-196; Dec. 29, 1979, 55-197

Int. Cl.³ A32B *15/18*; C23C *7/00*

U.S. Cl. 427—376.8 **10 Claims**



1. A method of preventing the crevice corrosion of austenitic stainless steel to be placed in a corrosive environment by applying a molten alloy of the following composition onto the surface of the area of austenitic stainless steel that is to be in contact with another object or the area that surrounds such area: 10–50 wt% Cr, 3–35 wt% Mo and the balance being Ni or Co or both Ni and Co and incidental impurities, the Cr and Mo levels being within the range defined by A-B-C-D-E in accompanying FIG. 4.

4,325,995

METHOD AND AN APPARATUS FOR THIN FILM FORMATION

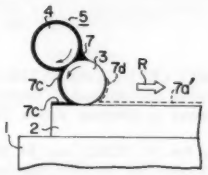
Yoshitaka Tamura; Shizuo Ishitani, and Takashi Shigemura, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,997

Claims priority, application Japan, Jun. 6, 1979, 54/69895

Int. Cl.³ B05D *1/28*

U.S. Cl. 427—428 **4 Claims**



1. In a method for thin film formation comprising the steps of:

feeding a film-forming material onto a platform with a roll coater including a distributing roller and a coating roller, said coating roller being adapted to be in contact with the distributing roller under pressure and with the platform;

coating said material on the platform by rotating the coating roller and by moving the roller coater over the platform; and

transferring the material coated on the platform onto an object on which a thin film is to be formed, thereby forming a film of said material on said object;

the improvement which comprises rotating said coating roller in a reverse direction with respect to the direction of movement of the roll coater over said platform thereby scraping the material coated previously and remaining on the platform after the transferring step by the reverse rotation of said coating roller and collecting the scraped material in a puddle of said material formed between the distributing roller and the coating roller, the scraping and collecting steps being effected simultaneously with the coating step whereby said film forming material is coated in a uniform thickness on said platform.

4,325,996

ARTIFICIAL BIRD AND METHOD OF MAKING SAME

Rickie F. Krietemeier, 6311 S. Florence Way, Englewood, Colo. 80111, and Gary D. Davis, 7930 E. Edgewood Dr., Indianapolis, Ind. 46239

Filed Jul. 24, 1980, Ser. No. 171,746

Int. Cl.³ A41G *9/00*; A63H *33/16*

U.S. Cl. 428—16 **16 Claims**

1. A replica of a bird comprising in combination:
a molded body consisting of a trunk, legs, neck and head; feet secured to each of the legs, and a feathered wing section

secured to said body said wing section having a base plate and interconnecting means extending from said base plate for interconnecting said wing section to said body; and

feather patterns for each of said feathered wing section, trunk and legs of said molded body, each feathered pattern comprising a flexible matrix and series of rows of individual feathers arranged to extend in horizontal courses with the feathers in each row partially overlapping the feathers in each next row in succession, and means for applying each of said feathered patterns in place on said matrix.

4,325,997

PROCESSABLE CELLULOSE ESTER COMPOSITIONS

Richard J. Brewer, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 20,392, Mar. 14, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,791

Int. Cl.³ B32B *15/08*; C08L *1/10, 1/12, 1/14*

U.S. Cl. 428—31 **16 Claims**

1. A processable halogenated phosphoric ester free cellulose ester plastic composition comprising (1) at least one cellulose ester plastic of the group consisting of cellulose acetate, cellulose propionate, cellulose butyrate, cellulose acetate propionate, cellulose acetate butyrate and (2) about 5 to 15 parts by weight of an acid accepting liquid epoxy compound per 100 parts by weight of said cellulose ester plastic.

9. Decorative trim prepared by extruding the composition of claim 1 onto metal foil.

4,325,998

BIAXIALLY STRESSED FLUORINATED POLYMER ROLL COVER

Harry S. Chapman, Hickory, Pa., assignor to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 870,771, Jan. 19, 1978, Pat. No. 4,250,605. This application Nov. 19, 1980, Ser. No. 208,372

Int. Cl.³ B32B *3/10, 31/00*; B44C *1/22*; B29C *17/08*

U.S. Cl. 428—36 **18 Claims**

1. A biaxially heat shrinkable fluorinated polymer sleeve, having an internal surface which is etched with a composition selected from the group consisting of sodium dissolved in a liquid ammonia, sodium dissolved in a mixture of naphthalene and tetrahydrofuran, and molten sodium hydroxide, said sleeve which also has said internal surface essentially coated with a high temperature elastomeric adhesive which is essentially a composition selected from the group consisting of polydimethylsiloxane silicone elastomer, with pendant hydroxy groups, and a chain silicone elastomer containing polydimethylsiloxane, alkane and phenylmethylsilane groups.

3. The invention of claim 1 wherein a plurality of apertures is placed through the surface of said sleeve, each of said apertures being about 4 millimeters or less in diameter and the distance between any two or more of said apertures being in a range of about 0.1 to about 5 centimeters.

9. A biaxially heat shrinkable fluorinated polymer sleeve, having an internal surface which is etched with a composition selected from the group consisting of sodium dissolved in liquid ammonia, sodium dissolved in a mixture of naphthalene and tetrahydrofuran, and molten sodium hydroxide.

4,325,999

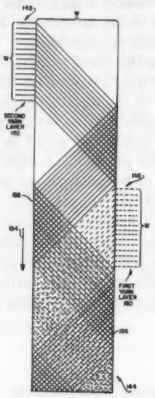
BIAS FABRIC

Arthur R. Campman, Los Angeles; George K. Shibata, Whittier, and William D. Cumming, Redondo Beach, all of Calif., assignors to Hitco, Irvine, Calif.

Filed Nov. 23, 1979, Ser. No. 96,833

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—112 **9 Claims**



1. A bias fabric having a pair of opposite sides extending along the length thereof and a generally uniform width between the pair of opposite sides and principally consisting of a plurality of generally parallel, spaced-apart yarns having a density of at least about 12 yarns per inch and extending back and forth across the width of the fabric and forming angles of approximately 45° with the opposite sides of the fabric, the plurality of yarns repeatedly intersecting each of the opposite sides of the fabric with each intersection of the plurality of yarns with one of the opposite sides occurring along a portion of the side equal to approximately twice the width of the fabric, the yarns consisting of material which is relatively porous and which is suitable for impregnation with and at least partial curing of a resin.

4,326,000

SOFT, ABSORBENT, UNITARY, LAMINATE-LIKE FIBROUS WEB

Clifford J. Roberts, Jr., Turnersville, N.J., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 583,708, Jun. 4, 1975, Pat. No. 4,000,237, which is a division of Ser. No. 356,051, Apr. 30, 1973, Pat. No. 3,903,342. This application Oct. 29, 1975, Ser. No. 626,993

Int. Cl.³ B31F *1/12*; B32B *3/28*

U.S. Cl. 428—153 **17 Claims**

1. Fibrous sheet material comprising,

a soft, absorbent, unitary, laminate-like web of substantially planar-aligned fibers,

the web having first and second surface regions, each on one side of a central core region, the central core region having less fiber concentration than the first surface region,

only one of said surface regions having a surface disposition

of bonding material extending only through said surface region,

a second, penetrating disposition of bonding material extending through the central core region and connecting the first and second surface regions together, the second penetrating disposition of bonding material being in a fine, spaced-apart pattern occupying less area in the plane of the web than the one, surface disposition of bonding material, whereby, the outer surface of the other surface region is interconnected to the one surface region with bonding material.

4,326,001

RADIATION CURED COATING AND PROCESS THEREFOR

Peter R. Sachs, New Windsor, and James W. Sears, Newburgh, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,587

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—161 **5 Claims**

1. Method of forming a pigmented, radiation cured coating on a substrate of embossed vinyl tile base or sheet material comprising:

(a) applying by roll coating to the substrate a pigmented first layer between about 0.01 and about 0.1 mm thick of radiation curable material and subjecting such layer to ultraviolet light in an atmosphere containing at least about 5,000 ppm oxygen until the radiation curable material is cured except for its surface said layer being applied onto the substrate so that all of the substrate is covered by the coating and with enough pressure to leave puddles of coating material in the embossed valleys of the substrate; and

(b) then applying by roll coating to the surface of the thus partially cured first layer an unpigmented second layer of the same or a different radiation curable material and subjecting the second layer to ultraviolet light in an inert atmosphere containing less than about 1,000 ppm oxygen to thereby completely cure said second layer and complete the cure of the first layer.

4,326,002

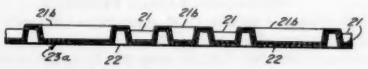
MULTI-PLY FIBROUS SHEET STRUCTURE AND ITS MANUFACTURE

Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application May 15, 1980, Ser. No. 149,912

Int. Cl.³ B32B *3/28*

U.S. Cl. 428—178 **2 Claims**



1. An absorbent fibrous sheet of papermaking fibers, comprising:

two webs with inner surfaces facing each other, each web having a plurality of crests and depressions of a first pattern on its inner surface;

the crests on each web being positioned between the crests on the other web and extending beyond the crests on the other web toward the depressions on the other web;

portions interconnecting crests and depressions of one web being laterally spaced from portions interconnecting crests and depressions of the other web;

means connecting at least some of the depressions of one web to the crests of the other web, whereby said webs are joined together to form said sheet; and

said sheet being embossed as a unit to have formed therein a plurality of registered crests ad registered depressions of a second pattern in each said web fitted compactly within one another throughout the extents of said crests and depressions, said crests of one of said webs extending beyond and spaced from the plane of the portion of said one web having said first pattern of crests and depressions.

4,326,003

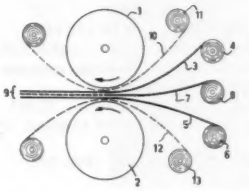
COMPOSITE PIECE MADE FROM FLEXIBLE MATERIAL AND PROCESS OF PREPARATION

Marc V. Bouhaniche, 96, rue Saint-Denis, 75001 Paris, France

Filed Oct. 1, 1979, Ser. No. 80,986

Int. Cl.³ B32B *7/14*

U.S. Cl. 428—198 **8 Claims**



1. Composite piece made of flexible materials, comprising at least two elementary layers of materials of which the nature and/or color and/or structure may or may not be identical, adjacent layers being bonded to one another by means of a large number of thermoplastic beads which are interposed between the two layers along several parallel lines and at a constant interval from one another and adhere irreversibly to each of the two said layers, said thermoplastic beads melting at a temperature of at least 180° C. and the two elementary layers being bonded together and printed on one or both faces from print transfer paper simultaneously in a single operation by heating the print transfer paper to a temperature of at least 200° C. sufficient to heat-print the outer face or faces and simultaneously heat-weld the two elementary layers together, the heat-printing being carried out at a higher temperature sufficient to vaporize coloring pigments in the print transfer paper and deposit them on the outer face or faces of the elementary layers, said higher temperature being selected so that the heat-weld temperature is lower but sufficient to heat-weld the elementary layers.

4,326,004

RASTER-SHAPED HEAT-SEALABLE ADHESIVE COATING FOR TEXTILES AND METHOD OF PRODUCING THE SAME USING A POWDER PRINTING PROCEDURE

Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Testilwerke KG, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,372

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946612

Int. Cl.³ B32B *3/16, 5/16, 5/30, 7/14*

U.S. Cl. 428—198 **12 Claims**

1. A raster-shaped heat-sealable adhesive coating on substrates, such as textile liners for outer garments, comprised of two adhesive layers, a first layer superimposed on a second layer via a powder printing technique, and at least one of said layers containing a polyvinyl chloride material and, optionally, a softening agent therefor.

11. A method of producing a raster-shaped heat-sealable adhesive coating on a substrate via powder printing techniques comprising:

providing a polyvinyl chloride-containing adhesive powder having an average particle size up to a maximum of about 250 μm,

providing another adhesive powder having an average particle size of less than about 150 μm, and

sequentially printing said powders onto a substrate surface in a select raster pattern so that said polyvinyl chloride-containing powder is in direct contact with said substrate surface and said another adhesive powder is superimposed onto said polyvinyl chloride-containing powder.

4,326,005

DRY RELEASE TRANSFER

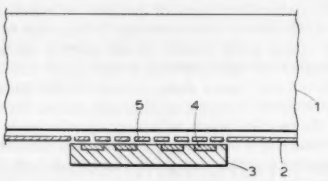
Kenneth J. Reed, 33 Carlysle Square, London S.W.3, and Alan L. Lythgoe, Hythe, both of England, assignors to Kenneth James Reed, London, England

Filed Feb. 15, 1979, Ser. No. 12,303

Claims priority, application United Kingdom, Feb. 15, 1978, 6068/78

Int. Cl.³ B32B *3/00*; C09J *7/02*

U.S. Cl. 428—201 **22 Claims**



1. A dry release transfer sheet which comprises a carrier sheet, a releasable layer adhered thereto and a stress-resisting transferable design layer printed on said releasable layer, said releasable layer having low cohesive strength and low tensile strength compared with the transferable layer and providing a surface capable of being wetted with an ink in printing said design layer and said design layer having an elongation at break which is at least 0.5% and a thickness which is at least 3 times the thickness of the releasable layer, whereby application of an external force to the carrier sheet in the region of the design layer causes stressing of the releasable layer and cohesive failure within the releasable layer thus physically releasing the design layer from the carrier sheet and enabling subsequent transfer of the design layer with an underlying portion of releasable layer.

4,326,006

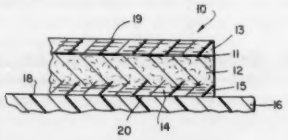
NON-SLIP PLACE MAT

Bernard Kaminstein, 29 Third Ave., New York, N.Y. 10003

Filed Feb. 5, 1981, Ser. No. 231,687

Int. Cl.³ B32B *3/00, 9/06*; C08L *7/02, 91/00*

U.S. Cl. 428—204 **36 Claims**



1. A non-slip place mat comprising:

a. a paper sheet, said sheet comprising a composition coating on both sides; and

b. said composition coating comprising a blend of water, a water soluble salt, a wax and a polymeric material having a molecular weight greater than the wax.

23. A method for preparing a coating composition for a paper place mat to render the mat slip resistant, comprising:

a. heating an amount of water;

b. melting an amount of wax;

c. adding to the heated water of step a., an amount of a water soluble salt;

d. adding the wax of step b. to the mixture of step c.; and

e. adding the mixture of step d. to a polymeric material.

4,326,007

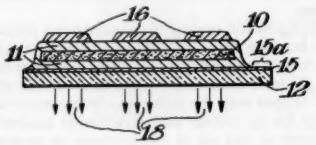
ELECTO-LUMINESCENT STRUCTURE

Ferd E. Williams, and David C. Morton, both of Newark, Del., assignors to University of Delaware, Newark, Del.

Filed Apr. 21, 1980, Ser. No. 142,043

Int. Cl.³ B32B *33/00*; H01J *1/63*

U.S. Cl. 428—333 **1 Claim**



1. A laminar electroluminescent structure comprising a semi-insulator layer consisting essentially of silicon monoxide having a thickness in the range of about 500 A to about 1000 A capable of producing relatively high energy electrons upon imposition of a voltage thereacross and, contiguous to said semi-insulator layer and in surface contact therewith, a phosphor layer consisting essentially of ZnF_2:Mn having a thickness in the range of about 150 A to about 5000 A receiving high energy electrons from said semi-insulator layer and luminescing by excitation due to impact of said high energy electrons derived from said semi-insulator layer, and electrodes on the outboard surfaces of said semi-insulator layer and said phosphor layer for applying an electrical voltage across said structure.

4,326,008

PROTEIN SPECIFIC FLUORESCENT MICROSPHERES FOR LABELLING A PROTEIN

Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 718,104, Aug. 27, 1976, abandoned. This application Apr. 25, 1980, Ser. No. 143,838

Int. Cl.³ B32B *5/16, 9/04*; G01N *31/00, 33/00*

U.S. Cl. 428—403 **15 Claims**

1. A protein specific fluorescent reagent composition for labelling a protein comprising discrete microspheres having a diameter below 100 microns containing a covalent bonding group selected from hydroxyl, amino or carboxyl covalently bound to a conjugate of said protein, said polymer comprising the addition interpolymerized reaction product of a monomer mixture consisting essentially of:

20 to 60% by weight of a first mono-unsaturated acrylic monomer containing at least one of said covalent bonding groups;

0.1% to 15% by weight of a fluorescent comonomer addition polymerizable with said first monomer; and

1 to 20% by weight of a polyunsaturated cross-linking agent addition polymerizable with said first monomer or comonomer.

4,326,009
POLYMERIC PARTICULATE CARRIER

Garfield P. Royer, 100 Howard St., Worthington, Ohio 43085

Continuation of Ser. No. 936,845, Aug. 25, 1978, abandoned, and a continuation-in-part of Ser. No. 819,283, Jul. 27, 1977, abandoned. This application Jul. 15, 1980, Ser. No. 169,264
Int. Cl.³ B32B 5/16
U.S. Cl. 428—407 12 Claims

1. A polymeric carrier having a predetermined particle size such that the largest dimension thereof is less than about 8 mm and the smallest dimension is at least 0.1 mm, said carrier comprising a plurality of polymeric segments containing chemically modifiable groups on the surface thereof, said segments being united into a coherent, stable porous matrix by means of cross-links between segments, said matrix defining at least one cavity of predetermined size, the particle size of said carrier, the porosity of said matrix and the presence of said cavity combining to provide desirable liquid compatability and diffusional characteristics.

4,326,010
ADDITIVE IN A PHOTOPOLYMERIZABLE COMPOSITION FOR REDUCING ITS ADHESION TO A SUPPORT FILM

Richard D. Bauer, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 15, 1979, Ser. No. 49,209
Int. Cl.³ B32B 27/36; C08F 255/02
U.S. Cl. 428—483 14 Claims

1. A method for reducing the adhesion between a support film and a photopolymerizable composition comprising polymeric binder, monomer and photoinitiator by incorporating into said composition an effective amount up to 4% based on the weight of the composition of an aliphatic polyester adhesion reducing agent selected from the group consisting of polyesters of hydroxy monocarboxylic acids or lactones thereof, and polyesters of dicarboxylic acids and diols, having an average molecular weight of 1500 to 40,000.

7. A photopolymerizable composition comprising polymeric binder, monomer, photoinitiator and an effective amount up to 4% based on the weight of the composition of an aliphatic polyester adhesion reducing agent selected from the group consisting of polyesters of hydroxy monocarboxylic acids, or lactones thereof and polyesters of dicarboxylic acids and diols, having an average molecular weight of 1500 to 40,000.

4,326,011
HOT CORROSION RESISTANT COATINGS

Joseph A. Goebel, Rocky Hill; Richard H. Barkalow, and Nicholas E. Ulion, both of Marlborough, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 11, 1980, Ser. No. 120,248
Int. Cl.³ B32B 15/04
U.S. Cl. 428—641 8 Claims

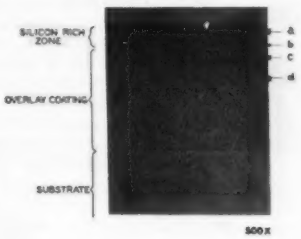
1. A coated superalloy article having enhanced resistance to hot corrosion which comprises:

a. superalloy substrate;

b. a thin adherent overlay coating, on the substrate, of a material selected from the group consisting of MCr, MCrAl, MCrAlY and MCrAlHf where "M" is selected from the group consisting of Fe, Ni, and Co and mixtures thereof;

c. a silicon enriched layer at the surface of the overlay coating having a thickness from about 10 to about 40% of the total coating thickness and having a silicon concentration of from greater than 10 to about 50%, balance selected from the elements which makeup the overlay coating with substantially all of the elements in the overlay coating being present.

8. A coated superalloy article having enhanced resistance to hot corrosion which comprises:



a. superalloy substrate;

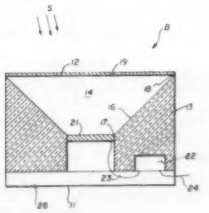
b. a thin adherent overlay coating, on the substrate, of a material selected from the group consisting of MCr, MCrAl, MCrAlY and MCrAlHf where "M" is selected from the group consisting of Fe, Ni, and Co and mixtures thereof;

c. a silicon enriched layer at the surface of the overlay coating having a thickness from about 10 to about 40% of the total coating thickness and having a silicon concentration of from about 20 to about 40%.

4,326,012
SOLAR POWER BUILDING BLOCK

Walter T. Charlton, 2011 "I" St. N.W., Ste. 303, Washington, D.C. 20006

Filed Sep. 18, 1980, Ser. No. 188,567
Int. Cl.³ H01L 31/04; F24J 3/02
U.S. Cl. 429—9 11 Claims



1. A device for forming static structures such as walls or the like exposed to sunlight comprising, in combination,

a building block having a molded body of rectangular cross-sectional shape and compressive strength for use as a building unit having opposed inner and outer side faces, said body outer side faces having a recess therin, said recess having side walls and an inner end,

a solar cell disposed in said body within the inner end of said recess, said recess having an outer end opening into said body outer side face for exposure to sunlight in a wall construction,

electric power storage means disposed within said body and circuit means for connecting said solar cell to said electric

power storage means whereby the electric power generated by said solar cell upon the impingement of sunlight on said solar cell passing through the outer end opening of said recess is stored in said storage means, and

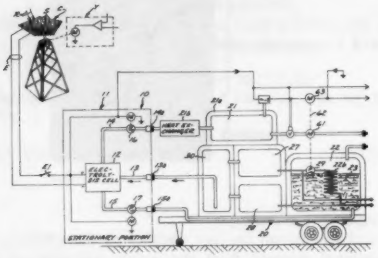
means for connecting said electric power storage means to an associated power utilization device.

4,326,013

ENERGY SYSTEM

Edgar F. Jacobi, 5N 754 Jens-Jenson, St. Charles, Ill. 60174, and Mark R. Madden, Rte. #2, Plainsfield, Wis. 54966

Filed Nov. 17, 1980, Ser. No. 207,658
Int. Cl.³ H01M *8/18*
U.S. Cl. 429—20 **8 Claims**



1. A transportable storage system conformed to transfer hydrogen and oxygen produced in the course of photovoltaic electrolysis of water, comprising:

a movable platform;

a first and second insulated coolant chamber mounted on said platform and storing coolant therein;

a container housing metallic fibers mounted on said platform;

a tank for storing gas under pressure mounted on said platform;

conveying means selectively connected to transfer said hydrogen and oxygen to said container and tank;

a first heat exchanger received in said container; and

circulating means for transferring water through said first heat exchanger from said first to said second chamber during the course of said transfer by said conveying means.

4,326,014

HIGH TEMPERATURE ORGANIC ELECTROLYTE CELLS

Arabinda N. Dey, Needham, Mass., assignor to Duracell International Inc., Bethel, Conn.

Division of Ser. No. 710,753, Aug. 2, 1976, Pat. No. 4,085,256, which is a continuation of Ser. No. 254,998, May 19, 1972, abandoned. This application Apr. 17, 1978, Ser. No. 897,211
Int. Cl.³ H01M *6/00*
U.S. Cl. 429—48 **5 Claims**

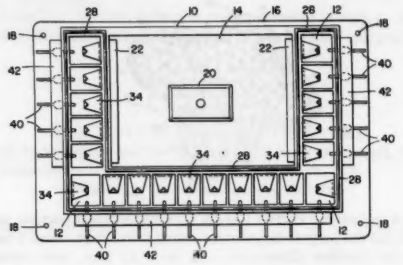
1. The method of treating anodes of active metals above hydrogen in the electromotive series for use in anhydrous electrochemical energy generating cells comprising the steps of immersing the active metal in an anhydrous organic electrolyte comprised of an organic solvent with an electrolyte salt dissolved therein and having a gaseous reactant selected from the group consisting of CO_2, SO_2, O_2, NH_3, and N_2 saturated with respect to water vapor bubbled therethrough; forming upon the surface of said active metal, with said gaseous reactant in the presence of the electrolyte, a coating of the reaction product of said active metal with said reactants; said coating being insoluble in said cell on open circuit but removable under the slight overvoltage conditions during discharge of said cell.

4,326,015

BATTERY ACTIVATE ASSEMBLY

Janet K. Kohler, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,670
Int. Cl.³ H01M *10/44*
U.S. Cl. 429—52 **15 Claims**



1. A battery activate assembly for filling a battery with a fluid electrolyte comprising:

(a) a box having a cavity, said cavity having an exit hole;

(b) means for puncturing the seal of a bottle containing said fluid electrolyte when said bottle is inverted and inserted into said cavity, said puncturing means being situated in said cavity so that said fluid electrolyte fills said cavity when said seal is punctured; and

(c) means for conveying said fluid electrolyte from said cavity via said exit hole to an individual cell of said battery.

11. A method for activating individual cells of a battery with a fluid electrolyte comprising the steps of:

(a) inserting a bottle containing said fluid electrolyte into a cavity of a box, said cavity having a knife edge, such that the seal of said bottle is punctured and said fluid electrolyte fills said cavity; and

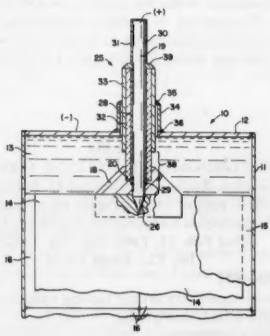
(b) conveying said fluid electrolyte from said cavity via a hole therein to an individual cell of said battery.

4,326,016

SWAGED SEAL FOR FUSED SALT BATTERIES

Theodore B. Selover, Jr., Shaker Heights, Ohio, and Thomas H. Hacha, Troy, Mich., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 30, 1980, Ser. No. 221,390
Int. Cl.³ H01M *2/08*
U.S. Cl. 429—184 **10 Claims**



1. A seal for fused salt batteries having a current conducting

rod partially within said battery and partially outside comprising:

a layer of material provided on the body of said current conducting rod leaving exposed the opposite ends thereof, said layer being inert in the fused salt electrolyte and compressible; and

a swaged metal sheath covering said layer compacting it to approximately its maximum density.

4,326,017

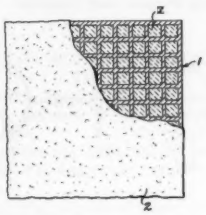
POSITIVE ELECTRODE FOR LEAD ACID BATTERY

Fritz G. Will, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,648

Int. Cl.³ H01M 4/56

U.S. Cl. 429—228 **9 Claims**



1. A positive electrode for use in a secondary lead-sulfuric acid electrolyte cell or battery comprised of a grid supporting an adherent external layer of PbO_2, said grid being comprised of an electrically conducting substrate having an at least substantially pinhole-free coating of semiconducting metal oxide, the sulfuric acid electrolyte having no significant deleterious effect on the coating and forming a substantially non-corroding oxide with the substrate.

4,326,018

LITHOGRAPHIC PRINTING PLATE

Paul Jargiello, Orange, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 58,976, Jul. 20, 1979, Pat. No. 4,233,390, which is a continuation-in-part of Ser. No. 859,967, Oct. 6, 1977, abandoned. This application Aug. 15, 1980, Ser. No. 178,657

Int. Cl.³ G03F 7/02; G03C 1/58, 1/76

U.S. Cl. 430—15 **14 Claims**

1. A lithographic printing plate which comprises a light-sensitive sheet material which has been imagewise exposed to a radiation source, the exposed plate developed and the developed plate post-cured by further exposure to a high intensity radiation source or air-baking at high temperatures wherein the light sensitive sheet material comprises a sheet substrate upon which had been coated a first layer comprising a photosensitive lithographically suitable diazo compound and a second layer comprising a lithographically suitable photopolymerizable composition.

4,326,019

POSITIVE TONERS CONTAINING LONG CHAIN HYDRAZINIUM COMPOUNDS

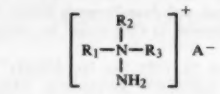
Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 19,695, Mar. 12, 1979, Pat. No. 4,269,922. This application Jan. 8, 1981, Ser. No. 223,511

Int. Cl.³ G03G 9/00, 13/16

U.S. Cl. 430—108 **11 Claims**

1. A positively charged toner composition comprised of a resin, a colorant and a long chain hydrazinium compound of the formula:



wherein R_1 is a hydrocarbon radical containing from 8 to 22 carbon atoms, R_2 and R_3 are independently selected from hydrogen or hydrocarbon radicals containing from 1 to 22 carbon atoms, and A is an anion selected from halides, sulfate, sulphonate, phosphate and nitrate.

10. A toner in accordance with claim **1** wherein a carrier material is added to the composition thereby resulting in a developer material wherein the toner is charged positively and the carrier is charged negatively.

11. A toner in accordance with claim **10** wherein the carrier is selected from polyvinylidene fluoride coated steel carrier or vinyl fluoride resin coated steel carrier.

4,326,020

METHOD OF MAKING POSITIVE ACTING DIAZO LITHOGRAPHIC PRINTING PLATE

Eugene Golda, Monsey, and Alan Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,843

Int. Cl.³ G03F 7/08

U.S. Cl. 430—302 **12 Claims**

1. A method for producing a positive acting lithographic printing plate which comprises:

(a) Coating at least one surface of a substrate with a first layer comprising a water soluble lithographically suitable, light sensitive, negative acting aromatic diazo composition; and

(b) applying to said first layer, a second layer comprising a water insoluble, ink receptive, water permeable negative working lithographic photosensitive composition which comprises:

(i) at least one water insoluble, water permeable, oleophilic resin selected from the group consisting of epoxy resins, polyurethane, polyester, urethane, poly(ethylene oxides), poly(vinyl hydrogen phthalate), poly(vinyl acetals) and poly(vinyl butyral) resins; and

(ii) The light-sensitive reaction product of a diazo diphenylamine-formaldehyde condensate with a benzophenone sulfonic acid; and

(c) determining on a sample of the coated substrate of step 1(b) the optimum amount of light, in lumens or equivalent, necessary to produce a GATF step 7 to step 9 negative working plate; and

(d) in an imaging step exposing the construction of step 1(b) to 3 to 15% of the "optimum amount of light" determined in step (c); and

(e) developing said exposed construction by washing with a developer comprising water whereby the light exposed areas of the two layers formed in steps (a) and (b) are removed; and then

(f) post exposing the developed construction to the above optimum amount of light for production of a negative-working plate whereby a positive-working lithographic plate is produced.

4,326,021

PHOTOGRAPHIC NEGATIVE MATERIAL WITH AT LEAST ONE LAYER CONTAINING A DESENSITIZED SILVER HALIDE EMULSION

Rolf Steiger, Praroman, and Jean-Francois Reber, Marly, both of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Filed Feb. 11, 1981, Ser. No. 233,411

Claims priority, application Switzerland, Mar. 7, 1980, 1819/80

Int. Cl.³ G03C *1/36*

U.S. Cl. 430—427 **11 Claims**

1. A photographic negative silver halide material with at least one layer which contains a desensitised silver halide emulsion, wherein this layer contains, as the desensitiser, a trinuclear heptamethinecyanine or a methine halogenated trinuclear tetramethinecyanine with each having three identical heterocyclic ring systems, which can have different substituents and are linked to one another by three identical methine systems, which can be mesomeric.

4,326,022

PHOTOGRAPHIC MATERIAL CONTAINING A HIGH BOILING SOLVENT

Kenji Ito; Katsumi Matsuura; Hiroshi Sugita; Toshihiko Kimura, and Hideaki Arai, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

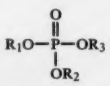
Filed Dec. 1, 1980, Ser. No. 211,893

Claims priority, application Japan, Dec. 7, 1979, 54-158113

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—546 **1 Claim**

1. A silver halide photographic material containing a hydrophobic photographic additive being contained in oil particles dispersed in a hydrophilic colloidal layer coated on a support wherein the oil particles consist of a compound represented by a formula



wherein R_1 represents an alkyl radical, and each of R_2 and R_3 represents an aryl radical, said additive comprising a magenta dye-forming coupler.

4,326,023

SPECTRAL SENSITIZATION OF PHOTOGRAPHIC EMULSIONS

Mary K. DeSeyn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

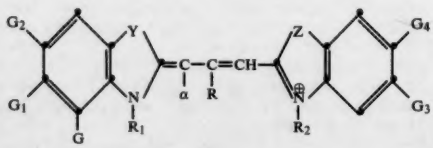
Filed Sep. 15, 1976, Ser. No. 723,418

Int. Cl.³ G03C *1/14*

U.S. Cl. 430—550 **11 Claims**

1. A photographic silver halide emulsion sensitized to the region of the electromagnetic spectrum between 590 and 640 nanometers with a dye from each of the following groups I, II and III:

I. a dye having the structural formula:



where:

Y is selenium or sulfur;

Z is oxygen or

R is methyl or ethyl;

R_1 and R_2 are each acid substituted alkyl;

α is hydrogen;

G is hydrogen;

G_1 is hydrogen, halogen or alkoxy;

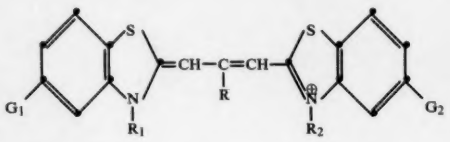
G_2 is hydrogen or alkoxy; or

G and G_1 or G_1 and G_2 are the atoms necessary to complete a fused benzene ring;

G_3 is alkyl, alkoxy, aryl, halogen or styryl; and

G_4 is hydrogen, alkyl or halogen;

II. a dye having the structural formula:



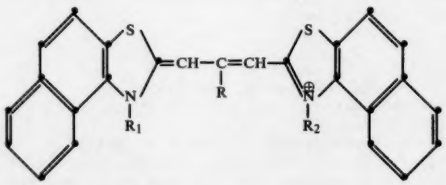
where:

R is methyl or ethyl,

R_1 and R_2 are each hydroxyalkyl or each acid-substituted alkyl; and

G_1 and G_2 are, independently, hydrogen, halogen, alkyl, aryl or alkoxy, provided that at least one of G_1 and G_2 is a substituent other than hydrogen; and

III. a dye having the structural formula:



where:

R is methyl, ethyl or a negatively charged ketomethylene residue which forms an allopolarcyanine dye; and

R_1 and R_2 are each acid-substituted alkyl; and dyes I, II and III have associated an anion or a cation, if necessary to neutralize the charge on the dye molecule.

4,326,024

SILVER HALIDE EMULSION CONTAINING YELLOW-DYE-FORMING COUPLER

Hidetoshi Kobayashi, and Mitsugu Tanaka, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

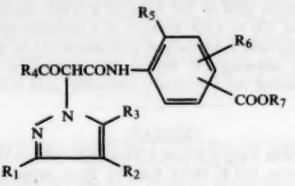
Continuation-in-part of Ser. No. 155,818, Jun. 2, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 245,842

Claims priority, application Japan, May 31, 1979, 54-68180; France, May 28, 1980, 80 11785; Fed. Rep. of Germany, May 29, 1980, 3020416; United Kingdom, Jun. 2, 1980, 1008/80

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—557 **12 Claims**

1. A silver halide color photosensitive material comprising a yellow-dye-forming coupler having the formula (I):



(I)

wherein R_1, R_2 and R_3 each independently represents a hydrogen, a halogen, an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryl group, a heterocyclic group or a carboxyl group; R_4 represents an aryl group or a tertiary alkyl group; R_5 and R_6 each independently represents a hydrogen, a halogen or an alkoxy group; and R_7 represents a substituted or unsubstituted alkyl group.

4,326,025

ANTI-HEMOLYTIC AGENT EMULSIONS AND THE USE THEREOF

Richard G. Buckles, Basel, Switzerland, and Jan W. Garber, McHenry, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 19, 1979, Ser. No. 105,468
Int. Cl.³ A01N *1/02;* A61K *35/14*
U.S. Cl. 435—2 **34 Claims**

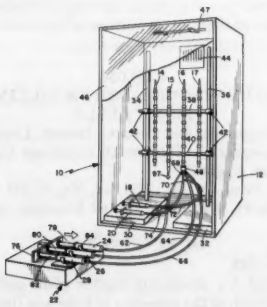
1. The method of storing blood in vitro for a period of more than two days at a reduced temperature in a hemocompatible container which also contains a sufficient quantity of an emulsion of an antihemolytic agent emulsified with a blood-compatible, nontoxic surfactant emulsifying agent, said antihemolytic agent being a fatty ester containing at least two ester linkages comprising fatty hydrocarbon groups of four to twelve carbon atoms each, said emulsion being stabilized and blood hemolysis reduced for a period of time equal to the duration of storage of the blood, when compared with blood under similar storage conditions in the absence of said emulsion.

4,326,026

METHOD FOR FRACTIONATING CELLS

Siddhartha Sarkar, Solana Beach, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 2, 1980, Ser. No. 155,227
Int. Cl.³ C12N *5/02;* A61K *35/48*
U.S. Cl. 435—2 **9 Claims**



1. A method for fractionating live cells comprising the steps of:

introducing a suspension fluid containing the live cells into an elongate chamber;

maintaining a laminar flow of a nutrient fluid longitudinally of the chamber to establish a longitudinal gradient of different fractions of the cells, the nutrient fluid being maintained at a temperature near that of the normal environment of the cells; and

extracting fluid samples containing the cell fractions from the chamber.

9. A method for obtaining enriched quantities of live male and female sperm cells in physically separate fractions, comprising the steps of:

introducing a predetermined quantity of a suspension fluid containing the live male and female sperm cells into the lower end of a vertically extending chamber;

introducing a nutrient fluid suitable for supporting the viability of the sperm into the upper end of the chamber at a first predetermined rate;

maintaining the temperature of the nutrient fluid at a level near that of the normal environment of the sperm cells;

draining the nutrient fluid from the lower end of the chamber at a second predetermined rate;

maintaining the first and second rates at relative levels sufficient to establish a vertically extending gradient of different fractions of the sperm cells; and

extracting different fractions of the sperm cells at vertically spaced locations along the chamber.

4,326,027

ANTIGLOBULIN CONTROL CELLS

Barry Wenz, White Plains, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Mar. 28, 1978, Ser. No. 891,019
Int. Cl.³ C12P *21/00;* C12N *5/00;* G01N *31/00*
U.S. Cl. 435—7 **15 Claims**

1. Hematological control cells comprising human red blood cells immunologically coated with univalent antibody 3.5S Fab fragments of an incomplete antibody wherein the degree of saturation of 3.5S fragments provides a+1 to +4 agglutination in the presence of active anti-human sera.

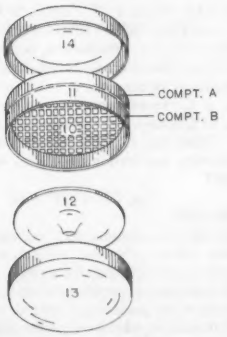
6. Hematological control cells comprising red blood cells having univalent antibody Fab fragments immunologically adhered thereto wherein the degree of saturation of said fragments provides a+1 to +4 agglutination in the presence of active anti-human sera.

4,326,028

ANTIBIOTIC TESTING VESSEL

Lewis R. Brown, 5 Hialeah Dr., Starkville, Miss. 39759

Filed Sep. 10, 1980, Ser. No. 185,746
Int. Cl.³ C12Q *1/18*
U.S. Cl. 435—32 **4 Claims**



1. A vessel for testing the biological activity of substances produced by microorganisms cultured on agar which comprises

a cylinder,

a perforate support member attached on its periphery to the inner wall of the cylinder, for supporting a layer of hardened agar perpendicular to the axis of the cylinder, and

sealing means removably attached to the inner wall of the cylinder adjacent the perforate support member for sealing the perforate support member while liquid agar poured onto it hardens.

4,326,029

PROCESS FOR PRODUCTION OF L-ASPARTIC ACID

Hideaki Yukawa; Terukazu Nara, and Yoshihiro Takayama, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,044

Claims priority, application Japan, Aug. 10, 1979, 54/101820

Int. Cl.³ C12P *13/20*

U.S. Cl. 435—109 2 Claims

1. In a process for producing L-aspartic acid from fumaric acid or a salt thereof and ammonia or an ammonium salt, the improvement which comprises using a cultured product which is obtained by aerobically culturing a microorganism belonging to the Genus Brevibacterium and having resistance to α-amino-n-butyric acid.

4,326,030

PROCESS FOR THE PRODUCTION OF PYRUVIC ACID AND CITRIC ACID

Refaat M. El-Sayed, Täby, Sweden, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 902,898, May 4, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,395

Claims priority, application Sweden, May 18, 1977, 7705883

Int. Cl.³ C12P *7/48, 7/40*

U.S. Cl. 435—144 74 Claims

9. A process for producing pyruvic acid which comprising cultivating in a medium containing a source of lactose carbon a strain of *Escherichia Coli* which is capable of producing pyruvic acid from lactose carbon and has substantially the same identifying characteristics as *Escherichia Coli* DSM 1392 until pyruvic acid is accumulated in a recoverable amount, said cultivation being under aerobic conditions at the beginning and later under anerobic conditions.

4,326,031

PROCESS FOR THE CONTINUOUS ENZYMATIC CHANGE OF WATER SOLUBLE α-KETOCARBOXYLIC ACIDS INTO THE CORRESPONDING α-HYDROXYCARBOXYLIC ACIDS

Christian Wandrey; Rolf Wichmann, both of Jülich; Wolfgang Leuchtenberger, Bruchköbel; Maria-Regina Kula, Wolfenbüttel, and Andreas Bückmann, Braunschweig-Stöckheim, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,444

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930087

Int. Cl.³ C12P *7/42*

U.S. Cl. 435—146 14 Claims

1. A process for continuously enzymatically converting water soluble α-ketocarboxylic acids in a membrane reactor equipped with a mean pore diameter of 1–3 nm into the corresponding α-hydroxycarboxylic acid comprising carrying out the conversion in the presence of a substrate specific dehydrogenate, a nicotinamide-adenine-dinucleotide (NAD^+/NADH) linked to a water soluble polymer of molecular weight 500 to 50,000 as coenzyme while simultaneously regenerating NADH from NAD^+ in the presence of a formate dehydrogenase by means of formate ion, there being employed 0.1 to 10 mmol/l of said coenzyme, continuously supplying to the reactor a substrate stream which contains 50 to 100% of the maximum amount soluble, but not over 2,000 mmol/l, of the reacting α-ketocarboxylic acid in the form of a water soluble salt as substrate, and 100 to 6,000 mmol/l of a formate, maintaining over the membrane a differential pressure of 0.1 to 15 bar and continuously drawing off behind the membrane a filtrate stream containing the α-hydroxycarboxylic acid formed.

4,326,032

PROCESS FOR THE PRODUCTION OF ORGANIC FUEL

Leslie H. Grove, 707 E. Hoyt Ave., St. Paul, Minn. 55106

Continuation-in-part of Ser. No. 68,209, Aug. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 922,748, Jul., 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,205

Int. Cl.³ C12P *7/08;* C12R *1/145*

U.S. Cl. 435—148 13 Claims

1. A method for producing a non-potable oxo- or oxy-aliphatic organic fuel boiling within the range of 20° to 200° C. and containing lower aliphatic monohydric alcohols or carbonyl compounds, which method comprises the steps of:

(a) blending water, a cellulose- or hemicellulose-containing particulate mass, and a fermentation agent to form a fermentation medium, said fermentation agent being selected from the group consisting of:

(i) a deliberate combination of at least two carbohydrase-producing Clostridium species in a ratio ranging from 9:1 to 1:9, at least one of said species being capable of producing cellulase; and

(ii) the carbohydrase enzymes produced by said combination;

(b) fermenting said particulate mass at fermentation temperatures, with supression of carboxylic acid production, until fermentation products are produced; and

(c) recovering the non-potable organic fuel from said fermentation medium.

4,326,033

MODIFIED UROKINASE HAVING EXTENDED ACTIVITY AND METHOD OF MAKING

William H. Holleman; Shaw-Guang Lee, both of Libertyville, and Paul P. Hung, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,823

Int. Cl.³ C12N *9/48, 9/72*

U.S. Cl. 435—212 7 Claims

1. A method of increasing the biological half-life of urokinase without substantially decreasing the fibrinolytic activity there of said method comprising treating urokinase to remove or degrade the carbohydrate portion of the molecule.

4,326,034

FERMENTATION PROCESS FOR PRODUCING HIGHER PLANT CELLS

Eric Peel, Shepperton, and Colin C. Dalton, Laleham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 8, 1979, Ser. No. 65,002

Claims priority, application United Kingdom, Aug. 16, 1978, 33470/78

Int. Cl.³ C12N *5/02*

U.S. Cl. 435—241 8 Claims

1. A method for producing higher plant cells which are capable of growth in the presence of light and the absence of a carbohydrate carbon source comprising cultivating higher plant cells which require a carbohydrate carbon source for growth, in the presence of light, a gas containing free oxygen and a gas containing carbon dioxide, in a liquid aqueous medium consisting essentially of inorganic elements required by the cells for growth and the carbohydrate and maintaining said plant cells in suspension and maintains the concentration of dissolved oxygen in the medium at a value within the range 10

to 250 n mol of oxygen per ml of medium while reducing the quantity of readily assimilable carbohydrate which is available to the cell to an amount which induces in the cell the development of an enhanced capacity for photosynthesis and continuing cultivation until cells which can grow in the presence of light and in the absence of carbohydrate are produced.

4,326,035

PROCESS FOR THE CULTURE OF AEROBIC MICROORGANISMS

Rodolfo Gabellieri, Brussels, Belgium, assignor to Interox, Brussels, Belgium

Filed Jan. 9, 1978, Ser. No. 868,466

Claims priority, application Luxembourg, Jan. 10, 1977, 76547

Int. Cl.³ C12N *1/32*

U.S. Cl. 435—247 **13 Claims**

1. Process for the culture of aerobic microorganisms in a culture medium provided with at least one source of oxygen, and with a highly flammable substrate comprised of at least one source of carbon and at least one source of hydrogen, consisting essentially of: providing oxygen originating from the decomposition of hydrogen peroxide as a sole added source of molecular oxygen and providing said highly inflammable substrate as a substrate having a flash point equal to or less than 30° C., said hydrogen peroxide being provided in the form of an aqueous solution in an amount such that oxygen is formed in a quantity sufficient to satisfy the growth needs of the microorganisms, whereby the risk of ignition of the substrate used is avoided.

4,326,036

PRODUCTION OF ETHANOL FROM SUGAR CANE

Frank W. Hayes, 144 Park West, London, W2 2QP, England

Filed Oct. 16, 1980, Ser. No. 197,538

Claims priority, application United Kingdom, Oct. 17, 1979, 36060/79

Int. Cl.³ C12P *7/06, 7/14, 7/08, 19/02*

U.S. Cl. 435—161 **8 Claims**

1. A method for the production of ethanol from sugar cane which comprises:

(i) chopping and shredding the harvested sugar cane to provide a digestion mass of juice and fibre;

(ii) subjecting the digestion mass of juice and fibre in a first continuous digestion zone to the hydrolytic action of a hemicellulase enzyme to break down at least some of the hemicellulose content of the sugar cane fibres into fermentable sugar;

(iii) separating the product digestion mass produced in step (ii) into a liquid fraction containing fermentable sugars both from the original juice and produced in the digestion zone by said enzyme, and a fibrous residue fraction;

(iv) subjecting the fibrous residue fraction from step (iii) in a second continuous digestion zone to the combined action of a cellulase enzyme and an ethanol-producing fermentation culture, thereby to partially break down the cellulose content of the fibre residue into a fermentable sugar and to initiate fermentation of that fermentable sugar, and any residual fermentable sugar carried over from the first digestion zone;

(v) separating the product digestion mass produced in step (iv) into a second liquid fraction comprising a partially fermented sugar juice, and a fibrous residue;

(vi) combining the liquid fraction from step (iii) with the liquid fraction from step (v) and subjecting the combined liquid fractions in a fermentation zone to a fermentation process using an ethanol-producing microorganism thereby to produce ethanol;

(vii) recovering the ethanol produced in step (vi); and

(viii) burning at least part of the fibrous residue produced in step (v) to provide at least some of the heat energy requirements of the process.

4,326,037

ENZYMATIC METHOD FOR IMPROVING THE INJECTABILITY OF POLYSACCHARIDES

William L. Griffith, Oak Ridge; Alicia L. Compere, Knoxville, and James W. Holleman, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 1, 1979, Ser. No. 90,176

Int. Cl.³ C13L *3/00*

U.S. Cl. 435—274 **9 Claims**

1. A method for enhancing the ability of a polysaccharide in an aqueous solution to flow through a porous medium, said aqueous solution having a tendency to plug said porous medium, comprising the steps of:

(a) contacting said polysaccharide with an endoenzyme capable of hydrolyzing at least one of the linkages between sugar units of said polysaccharide, and

(b) maintaining said polysaccharide in contact with said endoenzyme under hydrolysis conditions for a time sufficient to decrease said tendency of said polysaccharide in aqueous solution to plug said porous medium, said time insufficient to decrease the viscosity of said aqueous polysaccharide solution by more than 25%.

9. A method for recovering oil from an oil-containing subterranean formation penetrated by an injection means and a production means which comprises injecting through said injection means and into said formation flooding water containing as a thickening agent a polysaccharide treated according to the process of claims 1, 3, or 7.

4,326,038

SEALING COMPOSITION AND SEALING METHOD

Isao Oda, Nagoya, and Masayuki Kaneno, Tokoname, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 82,149, Oct. 5, 1979, abandoned, which is a continuation of Ser. No. 919,070, Jun. 26, 1978, abandoned. This application May 11, 1981, Ser. No. 262,794

Claims priority, application Japan, Jun. 29, 1977, 52-76550

Int. Cl.³ C03C *3/12*

U.S. Cl. 501—41 **2 Claims**

1. A sealing composition for sealing ceramics mutually or sealing ceramics and metal, consisting of 40–50% by weight of aluminum oxide, 35–43% by weight of calcium oxide, 3–10% by weight of yttrium oxide and 8–15% by weight of strontium oxide.

4,326,039

DENSE SHAPED ARTICLES OF POLYCRYSTALLINE β-SILICON CARBIDE AND PROCESS FOR THE MANUFACTURE THEREOF BY HOT-PRESSING

Jochen Kriegesmann, Durach-Bechen; Alfred Lipp, Bad Worishofen, and Klaus Reinmuth, Durach, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 163,214

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2927226

Int. Cl.³ C04B *35/56*

U.S. Cl. 501—90 **1 Claim**

1. Shaped articles of polycrystalline silicon carbide having a density of at least 99% of the theoretical density of SiC, consisting essentially of

at least 97.8% by weight of β-silicon carbide;

from about 0.1 to 0.8% by weight of aluminum;

up to about 0.8% by weight of nitrogen and/or phosphorus,

up to about 0.3% by weight of oxygen;

up to about 0.3% by weight of carbon, the β-silicon carbide being in the form of a single-phase microstructure and the other constituents being substantially in the form of a solid solution in the β-SiC lattice and having a flexural strength of at least 600 N/mm² up to at least 1450° C., measured

according to the four-point method at a stress rate of $3.mm^{-2}.sec^{31\ 1}$, and a predominantly transgranular fracture mechanism.

4,326,040

REFRACTORY FOR CASTING AND PROCESS FOR PRODUCING SAME

Nobuhiko Kaji, 2-2-8, Yugawa Kokura Minami-ku Kita Kyushu-shi, Fukuoka-ken; Hidenobu Honda, 2-11-36, Higashi Narumizu, Yahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, and Hiroshi Shikano, 4-9-40, Kobai, Yahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, all of Japan

Filed Dec. 24, 1980, Ser. No. 220,468

Claims priority, application Japan, Dec. 28, 1979, 54-170307

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—100 **10 Claims**

1. A highly durable refractory for casting comprising, based on the total weight of said refractory in each case, 5–80% by weight of refractory component including the principal mineral phase consisting of mullite, baddeleyite and corundum and having the chemical composition consisting of 25–85% by weight of Al_2O_3, 10–70% by weight of ZrO_2 and 5–25% by weight of SiO_2, respectively, based on the total weight of said chemical composition and 10–40% by weight of carbon powder.

4,326,041

PROCESS FOR THE CATALYTIC SYNTHESIS OF METHANOL

Hans-Joachim Bähnisch, Dortmund, Fed. Rep. of Germany, assignor to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,093

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934332

Int. Cl.³ C07C *27/06, 31/04*

U.S. Cl. 518—702 **2 Claims**

1. In a process wherein natural gas feed is cracked in a natural gas cracking plant to produce a raw gas which contains CO, CO_2 and H_2, the raw gas is compressed in several stages to a synthesis pressure of 50–150 bar, cooled and converted to methanol in a catalytic synthesis loop while gas is purged from the synthesis loop to maintain the inert gas level therein below a given limit, the improvement comprising exchanging heat to natural gas feed for the natural gas cracking plant from compressed raw gas at an intermediate stage of compression and exchanging heat to the purged gas from the finally-compressed raw gas.

4,326,042

MORPHOLINE AND PIPERAZINE DERIVATIVES IN A CATALYST SYSTEM FOR POLYESTER-BASED POLYURETHANE FOAMS

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,360

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—115 **9 Claims**

1. A catalyst system for use in reacting with an organic polyisocyanate and an organic polyester polyol to produce a polyurethane, the catalyst system comprising catalytic amounts of N-methoxypropylmorpholine, N-butylmorpholine and N,N'-dimethylpiperazine.

4,326,043

PROCESS FOR THE PREPARATION OF POLYISOCYANURATE DISPERSIONS MODIFIED WITH HALOGENATED ALCOHOLS AND COMPOSITIONS PREPARED THEREFROM

Thirumurti Narayan, Grosse Ile, and John T. Patton, Jr., Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 19, 1981, Ser. No. 225,936

Int. Cl.³ C08G *18/14, 18/77, 18/80;* **C08K** *5/06*

U.S. Cl. 521—137 **21 Claims**

1. A dispersible polyisocyanurate polymer prepared by (a) polymerizing an organic polyisocyanate in an organic solvent in the presence of an effective amount of a trimerization catalyst, (b) deactivating said catalyst, and (c) reacting the free isocyanate groups remaining in the polymer with a monofunctional halogenated alcohol.

4,326,044

FIRE-RETARDANT MONOCARBOXYLIC ACID COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 147,037, May 7, 1980, Pat. No. 4,278,767. This application Feb. 17, 1981, Ser. No. 235,261

Int. Cl.³ C08V *9/00*

U.S. Cl. 521—147 **5 Claims**

1. A fire-retardant foam composition having a density of between 1 and 10 pounds per cubic foot and consisting of a copolymer of 70 to 95 mole percent of a monovinyl aromatic monomer and 5 to 30 mole percent of an ethylenically unsaturated monocarboxylic acid monomer, from 10 to 20 parts per hundred parts of copolymer of an at least tribrominated diphenylether, and 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether.

4,326,045

THERMOPLASTIC RESINS CONTAINING COUMARONE-INDENE RESIN OR POLYINDENE

George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 909,323, May 24, 1978, Pat. No. 4,162,277, which is a continuation of Ser. No. 816,245, Jul. 18, 1977, Pat. No. 4,117,040, which is a continuation of Ser. No. 644,122, Dec. 24, 1975, Pat. No. 4,066,717. This application Jan. 22, 1979, Ser. No. 5,547

Int. Cl.² C08L *45/02, 33/12*

U.S. Cl. 525—206 **1 Claim**

1. A composition having improved physical properties comprising a blend of (A) 100 parts by weight of polymethyl methacrylate and (B) from 1 to 50 parts by weight of a member selected from the group consisting of polyindene and a coumarone-indene resin.

4,326,046

PROCESS FOR PRODUCING MODIFIED POLYTETRAFLUOROETHYLENE

Haruhisa Miyaka, Yokohama; Masami Yamashita, Yokosuka, and Tatsuro Asawa, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,505

Claims priority, application Japan, Nov. 30, 1979, 54-154222

Int. Cl.³ C08F *259/08*

U.S. Cl. 525—276 **4 Claims**

1. A process for producing a modified polytetrafluoroethylene which comprises polymerizing tetrafluoroethylene in an aqueous medium containing a dispersing agent with a polymerization initator source and then, copolymerizing tetrafluoroethylene and a fluorinated monomer having an acid functional group or a functional group which is convertible to the acid group as a copolymerizable modifier in the presence of the

resulting polytetrafluoroethylene to obtain modified polytetrafluoroethylene particles having cores made of homopolymer of tetrafluoroethylene and sheath layers in which the copolymerized specific modifier is present in the ratio of about 0.001 to 10 mol% based on the total polymer.

4,326,047

PROCESS FOR REACTING ALKYLENE OXIDES WITH HYDROXYL-CONTAINING INITIATOR COMPOUNDS

Ronald L. Yates, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 6, 1980, Ser. No. 204,688
Int. Cl.³ C08G *65/26, 65/28*
U.S. Cl. 525—507 **3 Claims**

1. In a process for reacting one or more monoepoxy-containing compounds with a compound or mixture of compounds having one or more OH and/or SH groups in the presence of calcium naphthenate as a catalyst, the improvement which comprises employing said catalyst in solid form.

4,326,048

METHOD FOR EMERGENCY SHUTDOWN OF GAS PHASE POLYOLEFIN REACTOR

Jack F. Stevens, Naperville; Kwok-fu Lee, Glen Ellyn; Philip M. Rose, Naperville; David R. Kreider, and Chi-Hung Lin, both of Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,773
Int. Cl.³ C08F *2/34, 2/42, 10/06*
U.S. Cl. 526—68 **5 Claims**

1. A method of rapidly terminating and restarting a gas phase olefin polymerization reaction using a titanium halide/aluminum alkyl catalyst system comprising (1) discontinuing catalyst addition, (2) discontinuing reactor quench liquid flow, (3) discontinuing reactor off gas flow, (4) injecting an amount of carbon oxide sufficient to terminate the reaction, (5) discontinuing recycle gas flow, (6) venting and flushing polymerization reactor, (7) resuming quench liquid, off gas and recycle gas flow, (8) injecting an amount of aluminum alkyl sufficient to initiate polymerization and (9) resuming titanium halide addition.

4,326,049

PHASE TRANSFER FREE-RADICAL POLYMERIZATION

Jerald K. Rasmussen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 18, 1979, Ser. No. 76,529
Int. Cl.³ C08F *4/50, 4/48, 20/18*
U.S. Cl. 526—91 **8 Claims**

1. A process for the polymerization of free-radical polymerizable, ethylenically unsaturated monomeric material comprising:

(1) placing in a suitable vessel an organic liquid comprising said polymerizable, ethylenically unsaturated monomeric material;

(2) adding to said organic liquid:

(a) a water-soluble, organic-insoluble free-radical initiator, and

(b) an organic phase transfer agent capable of complexing with said initiator to produce an adduct which is soluble in said organic liquid and has the general formula $(Q^+)_nX^{n-}$, wherein Q^+ is

(i) a cation complex of an alkali or alkaline earth metal or ammonium cation and a neutral donor molecule selected from the group consisting of multidentate compounds, an amine selected from the group consisting of N,N'-dimethylpiperazine, 1,4-diazabicyclo octane, N,N,N',N'-tetramethylethylenediamine, piperazine hexamethyl phosphoric triamide, amphoteric compounds; or

(ii) a cation having the formula $(A_mM)^+$ where A is an organic radical having from one to eighteen carbon atoms bonded to M by m covalent linkages and M is an element selected from Groups VA and VIA of the Periodic Table of Elements;

and X^{n-} represents the anionic residue of a free-radical initiator having a valency of n which is capable of producing free-radicals upon activation, and n is an integer of 1 or 2;

(3) activating said adduct to produce free-radicals; and

(4) permitting said free-radicals to cause said monomeric material to polymerize.

4,326,050

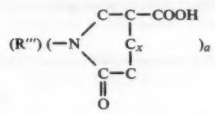
PROCESS AND PRODUCT

Heinz Schulze; Robert L. Zimmerman, and Harold G. Waddill, all of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 847,642, Nov. 1, 1977, which is a continuation-in-part of Ser. No. 689,409, May 24, 1976, abandoned. This application Apr. 1, 1981, Ser. No. 249,799
Int. Cl.³ C08G *59/52, 59/58*
U.S. Cl. 528—94 **5 Claims**

1. The method of curing an uncured epoxy resin which comprises

curing 100 parts of said uncured epoxy resin in the presence of aromatic polyamine curing agent and 1–15 parts of an accelerator



wherein x is an integer of 0–2; a is an integer of at least 2; R''' is a polyoxyalkylene chain having terminal carbon atoms to which the nitrogen atoms are bonded; and the molecular weight of R''' is 200–2100.

4,326,051

ACRYLONITRILE POLYMERIZATION WITH ORGANIC SOLVENT

Carlhans Süling, Odenthal; Siegfried Korte, Leverkusen, and Theo Neukam, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 56,493, Jul. 11, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,376
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833143
Int. Cl.³ C08F *2/06, 22/30*
U.S. Cl. 528—386 **6 Claims**

1. A process for the preparation of a polyacrylonitrile or of a co-polymer comprising predominantly acrylonitrile, said polymers having a K-value of from 50 to 100, a dye absorption capacity for cationic dyes of at least 0.5% by weight, a conductivity, measured in dimethylformamide solution, of at least 10μ Siemens, and from 0.2 to 1.5% by weight of sulfur fixed to said polymer, wherein acrylonitrile either alone or with up to 30% by weight of at least one ethylenically unsaturated comonomer, selected from the group consisting of acrylic acid alkyl esters, vinyl esters of aliphatic carboxylic acids, unsubstituted styrene or styrene substituted by alkyl groups, maleic acid andydride and N-alkyl-substituted maleic acid imides, is polymerized to conversions of from 40 to 95% by weight at temperatures of from 0° to 60° C., in an aliphatic hydrocarbon having a boiling point in the range of from −10° C. to 80° C. or in mixtures of aliphatic hydrocarbons boiling within the range of from −10° C. to 80° C., in the presence of a starter system consisting of from 0.1 to 8.0 mol % of sulfur dioxide, from 0.1 to 2.0 mol % of a hydroperoxide which is soluble in

the reaction medium and from 0.01 to 1.0 mol % of an organic acid which is soluble in the reaction system (based in each case on the quantity of monomers used).

4,326,052

DEACETYLATED POLYSACCHARIDE S-60

Kenneth S. Kang, LaJolla; George T. Colegrove, and George T. Veeder, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 47,505, Jun. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,538, Dec. 4, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,053

Int. Cl.³ C07H *1/00, 1/08*

U.S. Cl. 536—1 **4 Claims**

1. Deacetylated heteropolysaccharide S-60, which comprises (a) about 50% (wt./wt.) insoluble material of which about 34% (wt./wt.) is protein, and (b) about 50% (wt./wt.) carbohydrate which contains about 22–26% (wt./wt.) glucuronic acid, 0% acetyl groups, and the neutral sugars rhamnose and glucose in the approximate molar ratio 3:2, said rhamnose and glucose sugars being primarily 1,4 β-linked, said heteropolysaccharide being further characterized in that it is anionic, and forms brittle, thermoreversible gels.

4,326,053

POLYSACCHARIDE S-60 AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 47,598, Jun. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,531, Dec. 4, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,054

Int. Cl.³ C07H *1/00, 1/08*

U.S. Cl. 536—1 **5 Claims**

1. Heteropolysaccharide S-60, the carbohydrate portion of which contains about 6–9% (wt./wt.) O-acetyl groups as the O-glycosidically linked ester, about 22% (wt./wt.) glucuronic acid, and the neutral sugars rhamnose and glucose in the approximate molar ratio 3:2, said rhamnose and glucose sugars being primarily 1,4 β-linked, said heteropolysaccharide being further characterized in that it is anionic, forms elastic, thermoreversible gels which melt and set in the range of about 65°–70° C., and forms aqueous solutions whose 0.1% viscosity is 40–80 cP, measured on a Brookfield LVF viscometer, spindle 2, 60 rpm, 25° C.

4,326,054

CLEOMYCINS AND PROCESS FOR PRODUCING SAME

Hamao Umezawa, Tokyo; Tomohisa Takita, Asaka; Akio Fujii, Kamakura; Yasuhiko Muraoka, Kitamoto, and Mamoru Kunishima, Tokorozawa, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

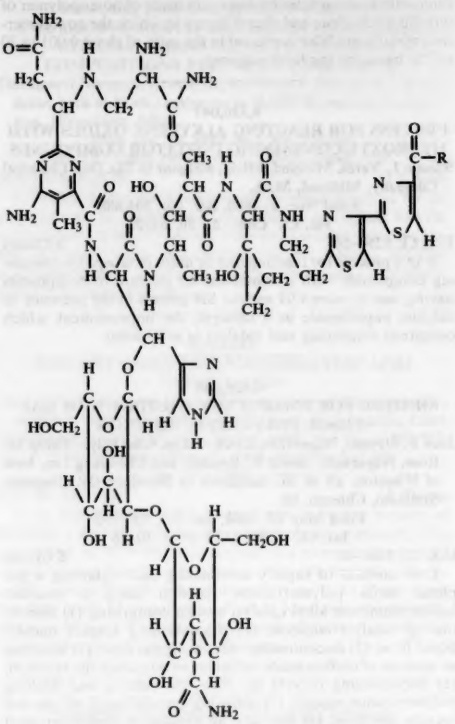
Filed Jul. 9, 1980, Ser. No. 167,439

Claims priority, application Japan, Jul. 19, 1979, 54-90951

Int. Cl.³ C07H *11/02, 13/12*

U.S. Cl. 536—17 R **8 Claims**

1. Novel antibiotics cleomycins represented by the formula



wherein R is a terminal amino residue corresponding to an aliphatic primary amine having at least two basic groups in the molecule, and nontoxic salts thereof selected from the group consisting of hydrochloride and sulfate salts, said basic groups being selected from the group consisting of nitrogen-containing, oxygen-containing and sulfur-containing organic groups.

4,326,055

STILBENE DERIVATIVES

Peter Loeliger, Kaiseraugst, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

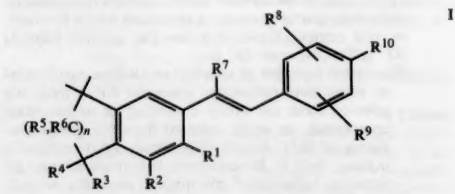
Continuation-in-part of Ser. No. 899,427, Apr. 24, 1978, Pat. No. 4,193,931. This application Dec. 15, 1978, Ser. No. 969,907

Claims priority, application Luxembourg, Dec. 22, 1977, 78751; Switzerland, Nov. 10, 1978, 11590/78

Int. Cl.³ C07C *69/76;* **C09B** *23/00, 55/00*

U.S. Cl. 542—429 **47 Claims**

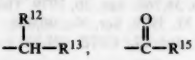
1. Compounds of the formula:



I

wherein n is an integer of from 1 and 2 and, when n is 1, R^1 and R^2 are individually hydrogen, lower alkoxy or halogen, or,

when n is 2, R^1 is hydrogen, lower alkoxy or halogen and R^2 is hydrogen; R^3, R^4, R^5 and R^6 are individually hydrogen or lower alkyl; R^7 is hydrogen, methyl or ethyl; R^8 and R^9 are hydrogen, lower alkyl or halogen; and R^{10} is $-(CH{=}CR^{19})_mR^{11}$; m is zero or 1; R^{11} is



or 2-oxazolinyl, or, when m is 1, R^{11} is additionally hydrogen; R^{12} is hydrogen or lower alkyl; R^{13} is hydrogen, lower alkyl, $-N(R^{17}, R^{18})$ or $-OR^{14}$; R^{14} is hydrogen, lower alkyl or alkanoyl; R^{15} is hydrogen, lower alkyl, $-OR^{16}$ or $-(CH_2)_pN(R^{17}, R^{18})$; R^{16} is hydrogen, lower alkyl, hydroxy-(lower alkyl), aryl, substituted aryl, aralkyl or aralkyl substituted in the aryl portion; R^{17} and R^{18} are individually hydrogen or lower alkyl or R^{17} and R^{18} taken together with the nitrogen atom to which they are attached form a heterocyclic group; R^{19} is hydrogen or lower alkyl and p is zero, 1, 2 or 3; as well as ketals thereof where R^{11} is $-C(O)R^{15}$ and R^{15} is hydrogen or lower alkyl, as well as salts thereof.

4,326,056

PROCESS FOR THE PRODUCTION OF 4-AMINO-6-TERT. BUTYL-3-MERCAPTO-1,2,4-TRIAZIN-5-ONE

Axel Kleemann, Hanau; Bernd Lehamnn, Friegericht, and Herbert Klenk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

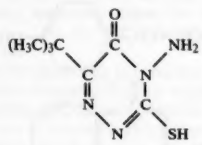
Filed May 22, 1981, Ser. No. 266,147

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020370

Int. Cl.³ C07D *253/06*

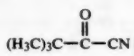
U.S. Cl. 544—182 **6 Claims**

1. In a process for the production of 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I)



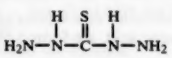
(I)

by reacting pivaloyl cyanide (II)



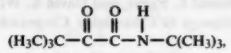
(II)

in a first reaction step with isobutylene in the presence of acetic acid and sulfuric acid and in a final reaction step forming the 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I) by means of thiocarbohydrazide (III)



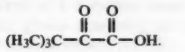
(III)

the improvement comprising reacting the pivaloyl cyanide (II) with isobutylene in the presence of 1.4 to 1.7 moles per mole of pivaloyl cyanide employed of sulfuric acid having a concentration between 93 and 100 weight percent, treating the reaction mixture obtained in this reaction with water and optionally more acetic acid in such amount that in each case it contains per mole of pivaloyl cyanide employed 50 to 220 grams of water and in all 150 to 850 grams of acetic acid with the proviso that the weight ratio of water to acetic acid is between 0.1 and 1.0:1, subsequently heating at boiling until by thin layer chromatography there is no longer detectable trimethyl pyruvic acid tert.butylamide



IV

diluting the reaction mixture with enough water that the weight ratio of water to acetic acid is between 0.4 and 2.0 and precipitating the 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I) with an amount of thiocarbohydrazide (III) at least equivalent to the content of trimethyl pyruvic acid



(V)

4,326,057

ADDUCTS OF ACROLEIN AND ISOCYANURIC ACID

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 219,209

Int. Cl.³ C07D *251/34*

U.S. Cl. 544—221 **29 Claims**

1. A process for the preparation of an aldehyde composition which comprises reacting isocyanuric acid with at least about 1 mole of acrolein per mole of isocyanuric acid under mildly acidic conditions.

4,326,058

ORGANO-PHOSPHORIC ESTERS AND THEIR PRODUCTION AND USE

Takayuki Okabe, Nishinomiya; Masachika Hirano, Ibaraki, and Kunio Mukai, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

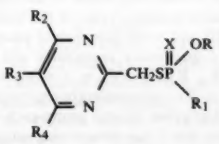
Filed Jan. 28, 1980, Ser. No. 116,214

Claims priority, application Japan, Feb. 5, 1979, 54-12496; Nov. 20, 1979, 54-151002

Int. Cl.³ C07F *9/65*; C07D *239/36*; A01N *57/16, 57/32*

U.S. Cl. 544—243 **7 Claims**

1. A phosphoro-thioate or dithioate of the formula,



wherein R is a methyl or ethyl group, R_1 is a methoxy, ethoxy, methylamino or ethylamino group, R_2 is a halogen atom, or a C_1–C_3 alkyl group, R_3 is a hydrogen atom, R_4 is a C_1–C_3 alkyl group and X is an oxygen or sulfur atom, provided X is an oxygen atom when R_1 is a methylamino or ethylamino group.

4,326,059

PROCESS FOR THE PRODUCTION OF THIOPHOSPHORIC ACID ESTERS

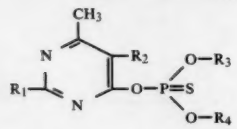
Robert Gargano; Donald E. Perez, and David K. Williams, all of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 16,753, Mar. 2, 1979, abandoned, which is a continuation of Ser. No. 865,098, Dec. 27, 1977, abandoned. This application Jun. 20, 1980, Ser. No. 161,475

Int. Cl.[3] C07F 9/65

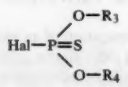
U.S. Cl. 544—243 11 Claims

1. In a process for the production of thiophosphoric acid esters of the formula I



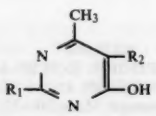
I

wherein R_1 is lower alkyl, lower alkenyl, lower alkoxy(lower) alkyl or lower alkylmercapto(lower)alkyl, R_2 is hydrogen, lower alkyl or lower alkenyl and R_3 and R_4 are lower alkyl, which comprises reacting a dialkyl phosphoric acid halide of formula II



II

wherein Hal represents chlorine or bromine and R_3 and R_4 are as defined hereinabove with a hydroxypyrimidine of the formula III



III

wherein R_1 and R_2 have the significance given to them above, in the presence of an organic solvent, the improvement which comprises

(a) in a first step, converting the hydroxypyrimidine reactant of formula III into the sodium salt with the aid of a sodium hydroxide solution consisting of 70% to 40% sodium hydroxide under reflux in an aromatic hydrocarbon solvent capable of removing water by azeotropic distillation below the decomposition point of the hydroxypyrimidine of formula III and in the presence of about 0.5 to about 3 mole-% of a quaternary ammonium salt of the formula $N(R_7, R_8, R_9, R_{10})\oplus Y\ominus$ as a phase transfer catalyst wherein R_7 to R_{10} independently represent an alkyl, aryl, aralkyl, cycloalkyl or alkaryl group each with at most 12 carbon atoms and Y is a neutralizing anion selected from among chlorides, bromides, iodides, sulfates, hydrogen sulfates, phosphates, perchlorates, nitrates and continuously removing water by an azeotropic distillation,

(b) in a second, condensation step, adding to the thus-dried slurried reaction mass at a temperature of about 60° to 80° C. the reactant of formula II.

4,326,060

PROCESS FOR PREPARATION OF FOLIC ACID DERIVATIVES

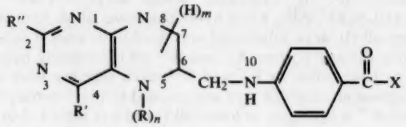
Peter R. Farina, North Salem, and James A. Grattan, Croton-on-Hudson both of N.Y., assignors to Baker Instruments Corporation, Bethlehem, Pa.

Division of Ser. No. 34,760, Apr. 30, 1979. This application Oct. 31, 1979, Ser. No. 90,064

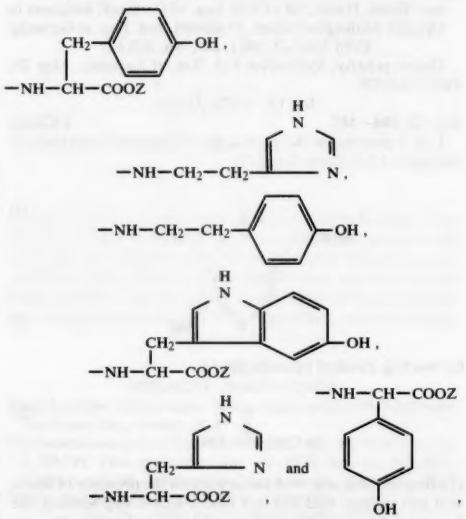
Int. Cl.[3] C07D 475/06

U.S. Cl. 544—258 8 Claims

1. A process for the preparation of a composition having the formula:

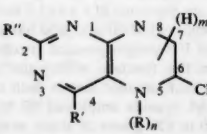


wherein R represents hydrogen, lower alkyl, formyl or iminomenthyl; R′ and R″ individually represent lower alkyl, hydroxyl, halo, amino or acetamido; m has a value of 1, 3 or 4; n has a value of zero or 1; and X is an amino acid or descarboxy amino acid moiety; selected from the group consising of:

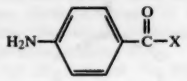


wherein Z is hydrogen or lower alkyl; said process comprising the steps of:

(a) contacting in the presence of a solvent of trifluoroacetic acid and glacial acetic acid, a 6-formyl-pterin of the formula:



wherein R′, R″, n and m are as above, with



wherein X is as above,

(b) removing said solvent, and suspending the reaction product of step (a) in glacial acetic acid,

(c) adding thereto dimethylamine borane, and recovering said composition.

4,326,061

SUBSTITUTED DECAHYDROQUINOLINES

Pyong-Nae Son, Akron, and Robert W. Layer, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 697,345, Jun. 18, 1976, Pat. No. 4,073,770. This application Jun. 30, 1977, Ser. No. 811,820

Int. Cl.³ C07D *215/14, 215/12*

U.S. Cl. 546—164 **4 Claims**

1. The compound 1-(2'-hydroxyethyl)-2,2,4-trimethyl decahydroquinoline.

2. The compound 1-(2'-hydroxyethyl)-2,2,4,8-tetramethyl decahydroquinoline.

3. The compound 1-(2'-hydroxybutyl)-2,2,4-trimethyl decahydroquinoline.

4. The compound 1-(3'-aminopropyl)-2,2,4-trimethyl decahydroquinoline.

4,326,062

MANUFACTURE OF POLYMERIZED 2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE

Takashi Kojima, Toyonaka; Eizo Okino, Nishinomiya, and Ryozo Ishimoto, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jul. 22, 1980, Ser. No. 171,239

Claims priority, application Japan, Jul. 26, 1979, 54/95824

Int. Cl.³ C07D *215/06*

U.S. Cl. 546—166 **4 Claims**

1. A method for producing polymerized 2,2,4-trimethyl-1,2-dihydroquinoline containing 25% by weight or more of dimerized 2,2,4-trimethyl-1,2-dihydroquinoline, which comprises subjecting a raw 2,2,4-trimethyl-1,2-dihydroquinoline monomer to polymerization in the presence of hydrochloric acid, the concentration of hydrochloric acid being from 15 to 25% by weight, and the amount of hydrochloric acid being from 0.2 to 0.5 mole per mole of the total of 2,2,4-trimethyl-1,2-dihydroquinoline and impurity amines contained in the monomer.

4,326,063

HIGH MOLECULAR WEIGHT PIPERIDINE DERIVATIVES AS UV STABILIZERS

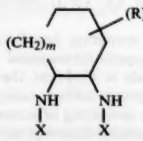
Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 24, 1980, Ser. No. 171,775

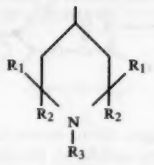
Int. Cl.³ C07D *401/08*

U.S. Cl. 546—191 **5 Claims**

1. A compound of the formula



wherein X is



R being selected from alkyl of 1–6 carbon atoms; with R_1 and R_2 being independently selected from the group consisting of alkyl of 1–6 carbon atoms; R_3 being selected from the the group consisting of hydrogen, hydroxyl, alkyl of 1–6 carbon atoms, benzyl;

m is 1 to 4; and

n is 0–3.

4,326,064

DERIVATIVES OF 1,4-DIHYDROPYRIDINE-3-CARBOTHIOL ACIDS

Brigita A. Vigante, ulitsa Dzirnavu, 46, kv. 6; Yan-Voldemar Y. Ozol, ulitsa Struktoru, 11, kv. 4; Rasma O. Vitolin, ulitsa Lielvardes, 26, kv. 39, all of Riga; Gunta O. Silenietse, ulitsa Mierv, 16/7, kv. 328, Rizhsky raion, Salaspils; Agris A. Kimenis, ulitsa Staitseles, 15, kv. 208, and Gunar Y. Dubur, ulitsa Ierikju, 43, kv. 2, both of Riga, all of U.S.S.R.

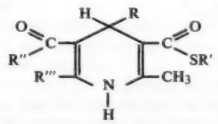
Continuation of Ser. No. 21,486, Mar. 19, 1979, Pat. No. 4,252,956. This application Oct. 28, 1980, Ser. No. 201,599

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—322 **2 Claims**

1. A compound of 1,4-dihydropyridine-3-carbothiol acid having the following structure:



wherein

R is hydrogen, lower alkyl, phenyl, or pyridyl;

R' is lower alkyl, or benzyl;

R'' is lower alkoxy;

R''' is methyl.

4,326,065

OXADIAZOLE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

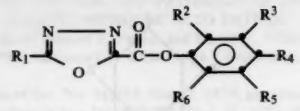
Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 955,449, Oct. 27, 1978, Pat. No. 4,236,013, which is a division of Ser. No. 797,667, Dec. 17, 1976, Pat. No. 4,137,235, which is a continuation of Ser. No. 484,846, Jul. 1, 1974, abandoned. This application Jun. 13, 1980, Ser. No. 159,090

Int. Cl.³ C07D *271/10*

U.S. Cl. 548—143 **8 Claims**

1. A composition of matter having the formula:



wherein R_1 is hydrogen, chloro, bromo, lower alkyl containing 1 to 12 carbon atoms, cyclohexyl, phenyl, lower alkyl phenyl, phenyl-substituted phenyl, alkoxy containing an alkyl radical containing 1 to 20 carbon atoms, chloromethyl and dimethyl amino; at least one R_2 or R_6 is hydrogen and the other R_2, R_3, R_4, R_5 and R_6 are hydrogen, lower alkyl having 1 to 12 carbon atoms, cyclohexyl, phenyl, lower alkyl phenyl, phenyl-substituted-phenyl, alkoxy containing an alkyl radical containing 1 to 20 carbon atoms, dimethyl substituted amino, hydroxy, nitrile, chloro and bromo.

4,326,066

TRIAZOLYL COUMARIN COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS WHITENERS AND LASER DYESTUFFS

Udo Eckstein, Cologne; Roderich Raue, Leverkusen, and Carl-Wolfgang Schellhammer, Berg.-Gladbach all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

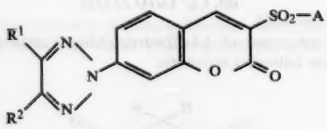
Filed Jan. 7, 1980, Ser. No. 109,957

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902470

Int. Cl.[3] **C07D** *405/4, 405/10, 413/14;* **C09K** *9/02*

U.S. Cl. 548—256 **2 Claims**

1. A coumarin compound of the formula



wherein

R^1 is C_{1-2} alkyl or phenyl,

R^2 is hydrogen, methyl or chlorine, and

A is C_{1-4}-alkyl optionally substituted by Cl, CN or O—C_{1-2}-alkyl, or phenyl optionally substituted by phenyl, Cl or methyl.

4,326,067

PROCESS FOR MAKING N-(2-AMINOETHYL)AMIDES

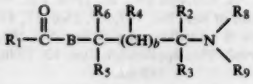
Michael J. Fazio, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1980, Ser. No. 212,476

Int. Cl.[3] **C07C** *85/20, 102/00, 245/18;* **C07D** *205/04, 207/06, 211/14, 223/04, 233/04*

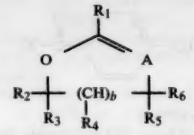
U.S. Cl. 548—347 **21 Claims**

1. A process for preparing a N-(2-substituted aminoethyl)amide of the formula:



I

the process comprising contacting one or more compounds of the formula:



II

with an amine of the formula:

III

and wherein A is nitrogen or a quaternary nitrogen of the formula:

IV

wherein B is

where A is nitrogen and B is

when A is IV; wherein $X\ominus$ is a counterion; and wherein R_1–R_7, which may be the same or different, are each hydrogen, an aliphatic or cycloaliphatic or aromatic radical, or an inertly-substituted aliphatic, cycloaliphatic or aromatic radical; and wherein R_8 and R_9, which are the same or different, are hydrogen, an aliphatic or cycloaliphatic or inertly-substituted aliphatic or cycloaliphatic radical; or R_8 and/or R_9 are:

$$R_{10}NH_2$$

wherein R_{10} is an aliphatic or cycloaliphatic or an inertly-substituted aliphatic or cycloaliphatic chain containing from 4 to 25 carbon atoms which separates the 2 nitrogen atoms by at least 4 carbon atoms; or R_8, R_9 and the mediate nitrogen atom form an inertly-substituted or unsubstituted aliphatic heterocyclic ring containing from 4 to 7 members; and wherein b is zero or 1.

4,326,068

PROCESS OF PREPARING HEXAFLUOROTHIOACETONE DIMER

Louis G. Anello, Hamburg, and Michael Van Der Puy, Cheektowaga, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 15, 1980, Ser. No. 216,035

Int. Cl.[3] **C07D** *339/00*

U.S. Cl. 549—89 **11 Claims**

1. In a process of preparing hexafluorothioacetone dimer wherein hexafluoropropene is contacted with elemental sulfur and alkali metal fluoride in a solvent, the improvement which comprises using an aprotic solvent comprising a member selected from the group consisting of acetonitrile, dimethylacetamide, dimethylformamide, dimethyl sulfoxide and N-methyl pyrrolidone while maintaining an absolute pressure of the contact at substantially one atmosphere.

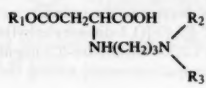
4,326,069

N-SUBSTITUTED ASPARTIC ACID MONOESTERS

Friedrich Stockinger, Hölstein; Sameer H. Eldin, Birsfelden, and Friedrich Lohse, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

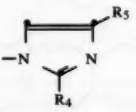
Filed Apr. 28, 1980, Ser. No. 144,136
Claims priority, application Switzerland, May 8, 1979, 4306/79
Int. Cl.³ C07C *101/22;* C07D *233/61*
U.S. Cl. 560—169 6 Claims

1. An N-substituted aspartic acid monoester of the formula



wherein

R_1 is alkyl having 1 to 4 C atoms or cyclohexyl, and R_2 and R_3 are each a methyl or ethyl group, or together with the N atom they form an N-heterocyclic ring of the formula



wherein R_4 is methyl, and R_5 is a hydrogen atom or ethyl.

4,326,070

BETA DEUTERATED 2-ETHYLHEXANOL AND DERIVATIVES

Bruce J. Beimesch, Crescent Springs, Ky., and Clarence E. Clark, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 17, 1981, Ser. No. 235,257
Int. Cl.³ C07C *69/48, 69/50, 69/003, 31/125*
U.S. Cl. 560—190 4 Claims

3. Di(2-d-2-ethylhexyl)azelate.

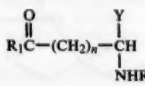
4,326,071

HALOMETHYL DERIVATIVES OF GAMMA-AMINOBUTYRIC ACID AND RELATED COMPOUNDS

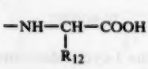
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Sep. 28, 1977, Ser. No. 837,300
Int. Cl.³ C07C *101/10, 101/18*
U.S. Cl. 562—574 8 Claims

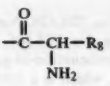
1. A compound of the formula



wherein Y is FCH_2- or F_2CH-; R_1 is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, $-NR_{10}R_{11}$ wherein each of R_{10} and R_{11} is hydrogen or a straight or branched alkyl group of from 1 to 4 carbon atoms or



wherein R_{12} is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; R_2 is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or



wherein R_8 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; n is the integer 2 or 3; or a pharmaceutically acceptable salt or an individual optical isomer thereof.

4,326,072

RUTHENIUM CATALYZED HYDROGENATION OF D-GLUCURONIC ACID

Walter M. Kruse, and Makram H. Meshreki, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Jul. 1, 1980, Ser. No. 165,210
Int. Cl.³ C07C *59/105*
U.S. Cl. 562—587 9 Claims

1. A process for the preparation of L-gulonic acid which comprises hydrogenating D-glucuronic acid in a solvent at a temperature up to about 130° C. and in the presence of a ruthenium catalyst.

4,326,073

PRODUCTION OF ANHYDROUS OR SUBSTANTIALLY ANHYDROUS FORMIC ACID

Dieter Wolf, Gruenstadt; Rudolf Schmidt, Frankenthal; Ulrich Block, Ludwigshafen; Hartmut Schoenmakers, Heidelberg; Kaspar Bott, Wachenheim, and Gerd Kaibel, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,501
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914671
Int. Cl.³ C07C *51/09*
U.S. Cl. 562—609 12 Claims

1. In a process for obtaining anhydrous or substantially anhydrous formic acid by hydrolysis of methyl formate, the improvement which comprises:

(a) hydrolyzing methyl formate;

(b) in a first stage distillation column, distilling methanol and excess methyl formate from the hydrolysis mixture obtained in step (a);

(c) extracting the bottom product of the first distillation stage (b), consisting essentially of formic acid and water, by means of a liquid-liquid extraction with an extractant which in the main takes up the formic acid;

(d) in a second stage distillation column, distilling the extract phase, consisting essentially of formic acid, the extractant and a part of the water;

(e) recycling, as vapor, into the lower part of the distillation column of stage (b), the top product obtained from the second distillation stage (d) and consisting essentially of

(1) all or part of the water introduced into said second stage (d), and

(2) part of the formic acid;

(f) separating, by distillation in a third stage distillation column, the bottom product of distillation stage (d) consisting essentially of

(1) the extractant with or without part of the water, and

(2) the greater part of the formic acid into anhydrous or substantially anhydrous formic acid and the extractant; and

(g) recycling to the process the extractant leaving the third distillation stage (f).

4,326,074

AMIDINOUREAS

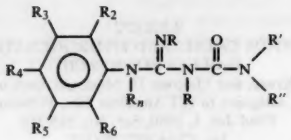
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 738,428, Nov. 3, 1976, abandoned, which is a division of Ser. No. 558,186, Mar. 31, 1975, Pat. No. 4,025,652, which is a continuation-in-part of Ser. No. 486,783, Jul. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 291,474, Sep. 22, 1972, abandoned. This application Dec. 18, 1979, Ser. No. 104,942

Int. Cl.³ C07C *127/19*

U.S. Cl. 564—47 **11 Claims**

1. A compound of the formula:



where:

R_2 and R_6 may be the same or different and are: loweralkyl or halo;

R_3, R_4 and R_5 are hydrogen;

R is hydrogen;

R′ and R″ are hydrogen or a loweralkyl selected from the group consisting of methyl, ethyl, propyl and isopropyl;

R_n is hydrogen provided at least one of R′ and R″ is other than hydrogen; and

the non-toxic acid addition salts thereof.

4,326,075

AMIDINOUREAS

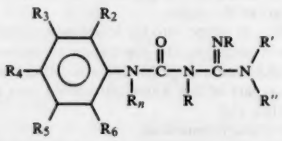
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 926,675, Jul. 21, 1978, Pat. No. 4,203,920, which is a continuation of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Feb. 5, 1980, Ser. No. 118,823

Int. Cl.³ C07C *127/19*; A61R *31/17*

U.S. Cl. 564—48 **3 Claims**

1. A compound of the formula:



where:

R_2 and R_6 are loweralkyl;

R_3, R_4 and R_5 are hydrogen;

R is hydrogen;

R′ is alkyl;

R″ is hydrogen; and

R_n is hydrogen; and

the non-toxic addition salts thereof.

4,326,076

METHOD FOR PREPARING THE OPTICALLY ACTIVE ISOMER OF 2,2-[[5-[3-[(1,1-DIMETHYLETHYL)AMINO]-2-HYDROXYPROPOXY]-1,2,3,4-TETRAHYDRO-2,3-NAPHTHALENEDIYL]BIS(OXY)]BIS[N,N-DIPROPYLACETAMIDE]

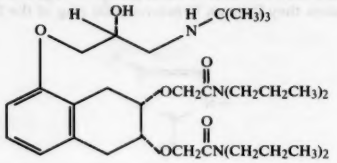
Jerome L. Moniot, Richboro, Pa.; Rita T. Fox, Princeton, and Francis A. Sowinski, Edison, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 9, 1980, Ser. No. 195,684

Int. Cl.³ C07C *103/24, 103/28*

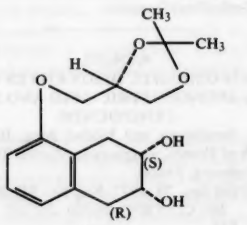
U.S. Cl. 564—156 **7 Claims**

1. A process for preparing the optically active isomer [2R-[2α,3α,5(R*)]]-2,2′-[[5-[3-[(1,1-dimethylethyl)amino]-2-hydroxypropoxy]-1,2,3,4-tetrahydro-2,3-naphthalenediyl]bis-(oxy)]-bis[N,N-dipropylacetamide] having the structure

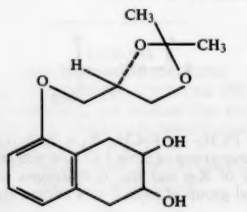


which comprises:

(1) reacting cis-5,6,7,8-tetrahydro-1,6,7-naphthalenetriol with an (R)-alkyl or aryl sulfonyl solketal, to form a mixture of d- and l-cyclic derivatives wherein the phenolic hydroxyl group is converted to an ether and the two alcoholic hydroxyl groups remain free, said cyclic derivatives having the structures



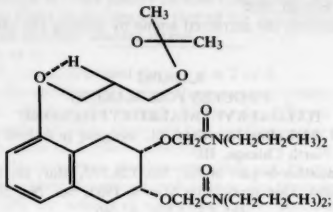
(l-isomer)



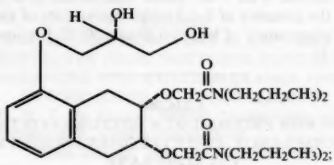
(d-isomer)

(2) separating out the l-cyclic derivative from said mixture;

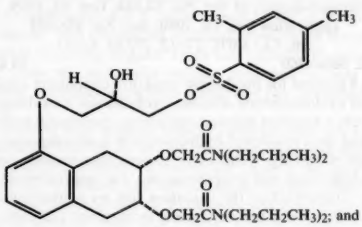
(3) reacting said l-cyclic derivative with N,N-dipropylchloroacetamide, N,N-dipropyliodoacetamide or, N,N-dipropylbromoacetamide, to yield a compound having the structure



(4) hydrolyzing the acetonide ring of the compound produced in (3) to yield



(5) reacting the compound produced in step (4) with mesitylenesulfonyl chloride to form



(6) removing the trimethylphenylsulfonyloxy group by reacting the compound produced in step (5) with t-butylamine to yield said optically active isomer.

4,326,077
N-HALOACETYLPHENYLAMINO CARBONYL CYCLIC INTERMEDIATES

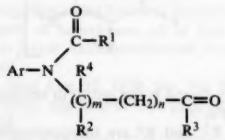
William L. Schinski, San Rafael; David C. K. Chan, Petaluma, and Irene C. Huang, Huntington Beach, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 14,410, Feb. 23, 1979, Pat. No. 4,260,410, which is a continuation-in-part of Ser. No. 892,365, Mar. 31, 1978, Pat. No. 4,174,210. This application Sep. 22, 1980, Ser. No. 189,504

Int. Cl.³ C07C *103/37*

U.S. Cl. 564—211 **4 Claims**

1. A compound having the formula



(I)

wherein

Ar is phenyl or phenyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, iodo, or alkyl of 1 to 4 carbon atoms, or substituted with 1 to 2 of the same or different substituents selected from alkoxy of 1 to 4 carbon atoms, nitro or haloalkyl of 1 to 2 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^1 is halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^2 and R^3 are joined together to form a carbocyclic ring of 5 to 6 carbon atoms;

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;

n is 0 or 1; and

m is 0 or 1.

4,326,078
PROCESS FOR PREPARATION OF HYDRAZOBENZENES BY CATALYTIC HYDROGENATION OF NITROBENZENES

Hans-Joachim Herrmann, Troisdorf, Fed. Rep. of Germany, assignor to Dynamit Noble Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,562

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833605

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—312 **19 Claims**

1. In a process for the hydrogenation of nitrobenzene with hydrogen to hydrazobenzene at temperatures ranging from 40° to 110° C. in the presence of a precious metal catalyst, an aqueous alkaline solution and an organic solvent, the reaction mixture being maintained in turbulent motion, the improvement wherein said nitrobenzene is o-, m- or p-chloronitrobenzene, the reaction is carried out in the presence of an organic solvent which is an aliphatic or cycloaliphatic hydrocarbon that is not miscible or not miscible in any ratio with water, the precious metal catalyst is used in such amount that the weight ratio of chloronitrobenzene used to precious metal catalyst is in the range 1:0.00005 to less than 0.0002, the aqueous alkaline solution being one wherein the alkali content thereof is greater than 20 weight percent, and the process is carried out in the presence of a quinone as co-catalyst, said quinone co-catalyst being present such that the weight ratio of monochloronitrobenzene to quinone co-catalyst is in the range of 1:0.0005 to less than 0.002.

8. In a process for the hydrogenation of nitrobenzene with hydrogen to hydrazobenzene at temperatures ranging from 40° to 110° C. in the presence of a precious metal catalyst, an aqueous alkaline solution and an organic solvent, the reaction mixture being maintained in turbulent motion, the improvement wherein said nitrobenzene is o-, m- or p-chloronitrobenzene, the reaction is carried out in the presence of an organic solvent which is an alcohol, the precious metal catalyst is employed in an amount such that the weight ratio of chloronitrobenzene employed to precious metal catalyst is in the range of 1:0.00005 to less than 0.0002, the aqueous alkaline solution employed being one in which the alkali content is greater than 20 weight percent.

4,326,079
PROCESS FOR PREPARING AROMATIC ALKYLAMINES

Ugo Romano, Vimercate, and Giuseppe Idri, San Donato Milanese, both of Italy, assignors to Anic, S.P.A., Palermo, Italy

Filed Feb. 22, 1980, Ser. No. 123,918

Claims priority, application Italy, Mar. 7, 1979, 20800 A/79

Int. Cl.³ C07C *85/02, 85/08*

U.S. Cl. 564—393 **6 Claims**

1. A process for preparing aromatic alkylamines consisting of reacting the relevant amine with a dialkylester of carbonic acid in the presence of an organic iodide and forming the relevant aromatic alkylamine.

4,326,080
PROCESS FOR THE PREPARATION OF 4-AMINO-DIPHENYLAMINES

Karlfried Wedemeyer, Cologne, and Siegfried Böhm, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,540

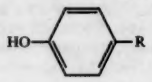
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926714

Int. Cl.³ C07C *85/02, 85/06*

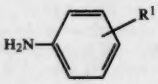
U.S. Cl. 564—402 **10 Claims**

1. A process for the preparation of a 4-amino-diphenyl amino derivative which comprises:

(a) contacting a hydroxybenzene of the formula



wherein R is hydroxyl or amino with an aniline compound of the formula



wherein R_1 represents hydrogen or an alkyl radical in the presence of a γ-aluminum oxide containing catalyst; and

(b) contacting the product from step (a) with ammonia in the presence of the same γ-aluminum oxide containing catalyst used in step (a).

4,326,081
CONVERSION OF MONONITROAROMATIC COMPOUNDS TO AMINO COMPOUNDS BY HYDROGEN SULFIDE

Charles T. Ratcliffe, Morristown; Stuart L. Soled, Madison; Anthony J. Signorelli, Succasunna, and Irving L. Mador, Morristown, all of N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 23, 1981, Ser. No. 237,326

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—416 **11 Claims**

1. In a process for hydrogenation at reaction temperature in the range between 200° and 400° C. of a mononitroaromatic compound, of the group consisting of nitrobenzene, nitrotoluene, and mono(chloro-, bromo-, fluoro- and hydroxy-) nitrobenzenes and nitrotoluenes, to the corresponding aminoaromatic compound comprising contacting said compound with a catalyst consisting essentially of titanium dioxide: the improvement which comprises employing hydrogen sulfide as the hydrogenation gas.

4,326,082
USE OF AQUEOUS TRIETHYLAMINE/PHOSPHORIC ACID SALT SOLUTIONS TO EXTRACT WATER AND TRIETHYLAMINE FROM SOLUTIONS THEREOF IN ORGANIC SOLVENTS

Patrick H. Martin, Danville, and Stephen L. Michaels, Oakland, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1980, Ser. No. 137,653

Int. Cl.³ C07C *85/26*

U.S. Cl. 564—497 **9 Claims**

1. The process for removing an amine from a feed solution thereof in an organic solvent which comprises:

(1) intimately contacting said feed with an extractant which is an aqueous solution of a 1:1 salt of said amine with ortho phosphoric acid and then separating the resultant raffinate and extract, and

(2) liberating the extracted amine by heating the extract.

4,326,083
PROCESS FOR MAKING HALOALKYLTRIALKOXYPHENONE

Wilbur H. McKellin, Deerfield, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 128,795, Mar. 10, 1980, abandoned. This application May 4, 1981, Ser. No. 260,160

Int. Cl.³ C07C *45/46*

U.S. Cl. 568—322 **14 Claims**

1. The process of making a trialkoxyphenyl haloalkyl ketone consisting essentially in mixing together a trialkoxybenzene in an inert solvent with 1–1.5 molar equivalents of a haloacyl halide in the presence of 1–1.5 molar equivalents of zinc chloride at a temperature of between 0° and 50° C. for a period of at least 1 hr.

4,326,084
PROCESS FOR PRODUCING A MIXTURE CONTAINING CYCLOHEXANOL AND CYCLOHEXANONE FROM CYCLOHEXANE

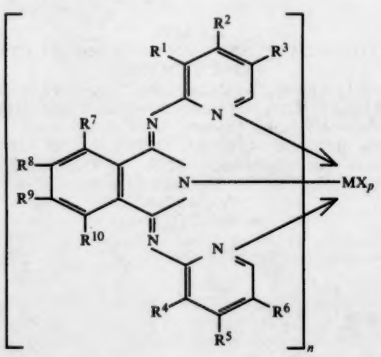
Joe D. Druliner, Newark; Steven D. Ittel, Wilmington; Paul J. Krusic, Wilmington, and Chadwick A. Tolman, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 83,644, Oct. 11, 1979. This application Sep. 16, 1980, Ser. No. 184,635

Int. Cl.³ C07C *27/12, 29/50, 45/33*

U.S. Cl. 568—360 **23 Claims**

1. In a process for producing a mixture containing cyclohexanol and cyclohexanone wherein cyclohexane is oxidized in air to provide a reaction mixture containing cyclohexyl hydroperoxide and the cyclohexyl hydroperoxide is decomposed in the presence of starting cyclohexane to provide a mixture containing cyclohexanol and cyclohexanone, the improvement comprising (1) conducting the oxidation step by contacting cyclohexane with air at a temperature of from about 120°–160° C. in the presence of a catalytic amount of catalyst composition consisting essentially of at least one transition metal complex having the structural formula



wherein the primary ligand is the entity in brackets;

M is Co, Mn or Fe;

R^1, R^2, R^3, R^4, R^5, and R^6 are independently hydrogen, lower alkyl, lower alkoxyalkyl, phenyl, benzyl, or phenethyl or any two adjacent members of R^1 through R^6 are jointly four CH entities of a benzene ring fused to the pyridine ring;

R^7, R^8, R^9 and R^{10} are independently hydrogen, lower alkyl

or lower alkoxyalkyl or any two adjacent members of R^7 through R^{10} can jointly be four CH entities of a benzene ring fused to the benzene ring of the isoindoline moiety;

X is an ancillary anionic ligand;

n is 1 or 2;

p is 0, 1 or 2, provided that n+p is 2 or 3;

with the proviso that when there are two primary ligands the values of R^1 through R^{10} can be different for each ligand and when there are two ancillary anionic ligands the value of X can be different;

and/or (2) conducting the decomposition step by contacting a reaction mixture containing cyclohexane and from about 0.1 to about 10% by weight of cyclohexyl hydroperoxide with a catalytic amount of said catalyst composition at a temperature of from about 80°–160° C., optionally in the presence of molecular oxygen.

4,326,085
PROCESS FOR REMOVING ALKALI METAL CARBOXYLATES FROM MIXTURES CONTAINING A CYCLOAKANONE AND A CYCLOALKANOL OBTAINED IN OXIDATION OF CYCLOALKANES

Mario G. R. T. De Cooker, Sittard, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 11, 1980, Ser. No. 158,578

Claims priority, application Netherlands, Jun. 14, 1979, 7904651

Int. Cl.³ C07C *29/86, 45/80*

U.S. Cl. 568—366 **13 Claims**

1. A process for the purification of organic solution mixtures of a cycloalkanone and a cycloalkanol in the corresponding cycloalkane, and containing a minor quantity of by-product impurities including organic acids and cycloalkyl esters, produced from the molecular oxygen oxidation of said corresponding cycloalkane, which comprises the combination of steps of

(1) treating said organic solution mixture with an aqueous alkaline solution to neutralize and/or saponify said acids and esters, whereby a two-phase organic/aqueous liquid system is formed, and separating an organic phase therefrom containing said cycloalkanone and cycloalkanol now contaminated with alkali metal organic carboxylic acid salts;

and then

(2) washing said cycloalkanone/cycloalkanol components of said organic phase with an aqueous acid solution, containing from 0.05 to 20 mgeq/kg relative to the organic mixture,

whereby a second two-phase organic/aqueous liquid system is formed;

and

(3) separating the organic phase of said second two-phase system from the aqueous acid phase,

to obtain a cycloalkanone/cycloalkanol product now substantially free from (a) organic acids and cycloalkyl esters and (b) alkali metal acid salts.

4,326,086
PROCESS FOR THE PREPARATON OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Edgar Möhring, Bergisch-Gladbach; Hanns P. Müller, and Kuno Wagner, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,650

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738154

Int. Cl.³ C07C *27/00, 31/18, 45/45*

U.S. Cl. 568—388 **1 Claim**

1. In a process for the preparation of low molecular weight polyhydroxyl compounds wherein formaldehyde hydrate is condensed in the presence of soluble or insoluble compounds of metals of the 2nd to 4th Main Group or 2nd to 8th sub-Group of the Periodic System of Elements as catalyst, and optionally in the presence of compounds capable of enediol formation as cocatalyst and/or of low molecular weight and-/or higher molecular weight polyhydroxyl compounds, the improvement which comprises controlling the pH during the condensation reaction by the addition of from 5 to 200 milliequivalents, based on 1 mol of formaldehyde, of N-methylmorpholine, N,N'-dimethylpiperazine or addition products, with a molecular weight of up to 1,000, of ethylene oxide and/or propylene oxide with morpholine or piperazine.

4,326,087
3-BROMO-4-FLUORO-BENZYL DERIVATIVES

Rainer Fuchs; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen; Hans-Jochem Riebel, Wuppertal, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

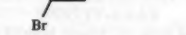
Filed Jul. 30, 1980, Ser. No. 173,544

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933985

Int. Cl.³ C07C *43/21*

U.S. Cl. 568—631 **7 Claims**

1. A 3-bromo-4-fluoro-benzyl derivative of the formula



in which X is hydroxy, phenoxy, benzyloxy, chlorine or bromine.

4,326,088
PROCESS FOR PREPARING 4,4-DIHYDROXYDIPHENYL ETHER

Harry Braus, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,450

Int. Cl.³ C07C *41/26, 43/263*

U.S. Cl. 568—638 **5 Claims**

1. A process for preparing 4,4'-dihydroxydiphenyl ether which comprises reacting 4,4'-diisopropyldiphenyl ether with oxygen to provide the dihydroperoxide derivative of 4,4'-diisopropyldiphenyl ether and thereafter decomposing said dihydroperoxide derivative in the presence of acid to provide 4,4'-dihydroxydiphenyl ether.

4,326,089
THERMAL PROCESS FOR PREPARING 3-PHENOXYBENZYL BROMIDE

Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 26, 1977, Ser. No. 836,428

Int. Cl.³ C07C *41/22*

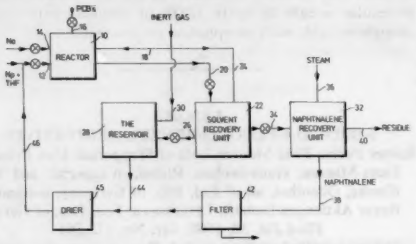
U.S. Cl. 568—639 **3 Claims**

1. A process for preparing m-phenoxybenzyl bromide, or m-phenoxybenzal bromide, or a mixture thereof, said process comprising brominating m-phenoxytoluene with bromine at a temperature above about 250° C., said process being conducted in the absence of a catalyst and in the absence of added u.v. radiation; said process being characterized by formation of a low amount of nuclear brominated by-product.

4,326,090
DESTRUCTION OF PCB'S

James G. Smith, and Gurbachan L. Bubbar, both of Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Oct. 8, 1980, Ser. No. 194,972
Int. Cl.³ C07C 1/20; C02F 1/70
U.S. Cl. 585—469 **10 Claims**



1. A process of dehalogenating a polyhalogenated organic material, which comprises reacting said polyhalogenated organic material with sodium naphthalenide in the presence of sodium metal.

4,326,091
PROCESS FOR THE SELECTIVE ADSORPTION OF PARA-XYLENE

Rudolf J. Maas, and Rene M. Visser, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1980, Ser. No. 143,386
Claims priority, application United Kingdom, May 1, 1979, 15081/79
Int. Cl.³ C07C 7/13; C10G 25/03
U.S. Cl. 585—828 **12 Claims**

1. A process for preparing a stream enriched in para-xylene from a mixture consisting substantially of aromatic hydrocarbons with six to nine carbon atoms in the molecule including para-xylene and ethyl benzene, comprising contacting the mixture with a crystalline silicate as selective adsorbent of para-xylene, and subsequently desorbing the para-xylene enriched stream from the silicate, which crystalline silicate, after calcining in air at 500° C.,

(a) is thermally stable up to at least 600° C.,

(b) has an X-ray diffraction pattern (Cu-Kα radiation, 0.15418 nm wave length) showing at least the reflections below:

2θ	Relative intensity
7.8–8.2	S
8.7–9.1	M
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W

-continued

2θ	Relative intensity
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

where θ is the Bragg angle, VS = very strong, S = strong, M = moderate, W = weak,

(c) measured at a hydrocarbon pressure of 8×10^{-2} bar at a temperature of 100° C. in the H-form it has an adsorption of n-hexane (n-C_6) of at least 0.8 mmol/g and an adsorption of 2,2-dimethylbutane (2,2-DMB) of at least 0.5 mmol/g, and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}}$$

should be at least 1.5,

(d) has the following overall composition:

$$y(1.0\pm0.3)M_2O.y(aFe_2O_3.bAl_2O_3).SiO_2$$

where:
M is H and an alkali metal
$a+b=1$
$a\geqq0$
$b\geqq0$
$O\leqq y\leqq0.1$

characterized in that the crystalline silicate is modified in order to increase its selectivity for para-xylene by bringing it into contact for a period of about 10 hours with a solution of concentration m (in gion/l) of a salt of a polyvalent rare earth cation whose charge density is e/R (in nm^{-1}) wherein the product (e/R)m is at least 45, after which it is filtered, washed and dried at an elevated temperature so that the salt decomposes to leave the metal cation in the crystalline silicate.

4,326,092
PROCESS FOR THE SEPARATION OF META-XYLENE

Richard W. Neuzil, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 17, 1980, Ser. No. 169,552
Int. Cl.³ C07C 7/12
U.S. Cl. 585—828 **11 Claims**

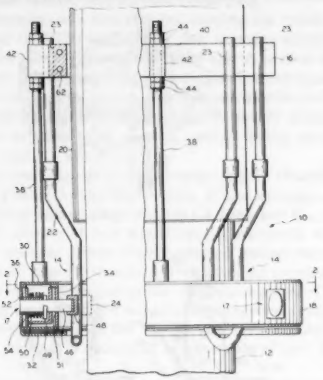
1. A process for separating meta-xylene from a feed mixture comprising meta-xylene the other xylene isomers and ethylbenzene which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a type Y zeolite containing sodium at the exchangeable cationic sites and having a silica to alumina mole ratio of from about 4.5 to about 5.0, selectively adsorbing therein said meta-xylene to the substantial exclusion of the remaining components of said mixture and thereafter recovering high-purity meta-xylene.

4,326,093

ELECTRODE CONTACT ASSEMBLY

John A. Persson, Gibsonia, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,531
Int. Cl.[3] H05B 7/107
U.S. Cl. 373—101 7 Claims



1. Contact assembly for arc furnace electrodes comprising support means having a pair of elongate spaced apart legs formed of an electrically conductive material,

a separate contact shoe affixed to each of said legs and adjacent their lower ends,

said contact shoes being substantially shorter than the legs to which they are affixed,

each contact shoe having a front face for engaging an electrode and a rear face configured complementary to the respective leg to which it is attached,

and a pressure member engaging the opposite side of each of said legs and adjacent their lower ends for jointly urging said contact shoes into engagement with an electrode whereby each of said contact shoes will individually engage the same to provide separate regions of electrical engagement between said contact assembly and said electrode,

said legs being electrically conductive and having passages formed therein for conducting cooling fluid.

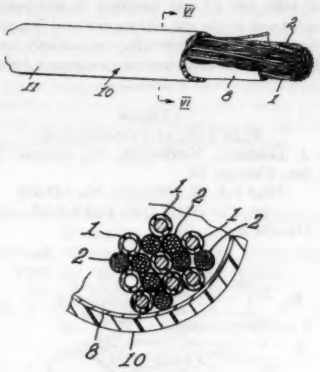
4,326,094

WATERPROOFING OF INSULATED ELECTRIC CABLES

Reginald A. Hunn, Natal, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Nov. 19, 1979, Ser. No. 95,357
Claims priority, application South Africa, Nov. 22, 1978, 78/6576
Int. Cl.[3] H01B 11/02
U.S. Cl. 174—23 R 17 Claims

1. An electric cable comprising an exterior sheath, a plurality of twinned, stranded insulated conductors having helical interstices associated therewith located within said sheath, a plurality of strand material carrier elements located in said helical interstices and extending along the entire length of said cable, said strand material carrier elements having deposited thereon an adjuvant incorporating a moisture sensitive swelling agent, said swelling agent reacting with any moisture leaking into said sheath to seal off the leak, the physical bending characteristics of said cable remaining substantially unchanged



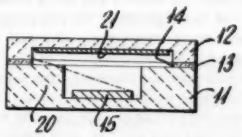
by the incorporation of said strand material carrier elements therein.

4,326,095

CASING COMPRISING A BARRIER FOR INTERCEPTING ALPHA PARTICLES FROM A SEALING LAYER

Teruo Yamaguchi, Nagoya, Japan, assignor to Narumi China Corporation, Nagoya, Japan

Filed Dec. 27, 1979, Ser. No. 107,714
Claims priority, application Japan, Dec. 28, 1978, 53-178552[U]
Int. Cl.[3] H05K 5/06
U.S. Cl. 174—52 FP 10 Claims



1. A casing for a semiconductor memory chip having a first surface and a second surface opposite said first surface, wherein said casing comprises a base member and a cap member;

said base member having a peripheral region having a peripheral surface, a mounting region having a mounting surface, and an intermediate region between said peripheral and said mounting regions;

said cap member having a cap-member peripheral surface, and a sealing layer interposed between said peripheral surfaces and hermetically sealing said members to each other at said peripheral surfaces;

at least one of said members being recessed and defining with the other of said members a hollow space over said mounting and intermediate regions and hermetically closed by said sealing layer;

at least one semiconductor memory chip being mounted on said mounting surface with said first surface exposed to said hollow space and said second surface attached to said mounting surface;

said sealing layer having an inside end surface exposed toward said hollow space and emitting alpha particles from said inside end surface at least toward a limited space

enveloping imaginary lines of vision of viewing said inside end surface and said first surface from one to the other;

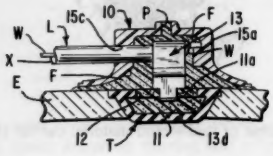
the improvement in which a barrier is an integral formation of at least one of said members in interposed relation between said inside end surface and said first surface, said barrier extending peripherally continuously into said limited space and intercepting said imaginary lines of vision.

4,326,096

ELECTRICAL CONNECTOR

William J. Leitmann, Northbrook, Ill., assignor to Hobson Bros., Inc., Chicago, Ill.

Filed Feb. 20, 1980, Ser. No. 123,032
Int. Cl.³ H01R 4/48; H04N 5/65
U.S. Cl. 174—84 R **7 Claims**



1. An electrical connector for use with a surface mounted terminal in a high voltage circuit, the terminal having a recess provided with an inwardly projecting lip delimiting an entry to the recess, said connector comprising a clip of electrically conductive material and having a pair of elongated protruding elements connected at one end by a bail section, the opposite end portions of said elements being free and adapted to extend into the terminal recess entry and resiliently engage and interlock with the terminal lip; an insulated electrical lead having an end portion thereof straddled by the coaction of said bail section and adjacent portions of said protruding elements, a distal first segment of the lead end portion extending in one direction from said bail section and being in electrical contact with and secured to a segment of the clip projecting from said bail section and being transversely disposed relative to said protruding elements, a second segment of the lead end portion extending in a second direction away from said bail section; an insulated cover piece accommodating said clip and the lead end portion and supportingly engaging the first and second segments of the lead end portion, said cover piece having a section thereof encompassing the clip protruding elements and being adapted to overlie a portion of the surface circumjacent the terminal; and a filler of adhesive rubberlike insulative material disposed in the interior of said cover piece and embedding therein said clip and at least the distal first segment of the lead end portion connected to said clip segment, said filler being adapted to embed therein the terminal lip when engaged by the clip protruding elements.

4,326,097

ELECTRICAL DEVICE WITH INSULATING CONDUCTOR SUPPORT STRUCTURE

Frank W. Heinrichs, Jr., McMurray, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

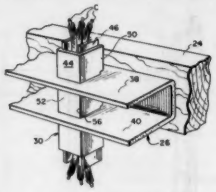
Filed Jan. 31, 1980, Ser. No. 117,202
Int. Cl.³ H01B 17/58; H02G 3/04; H01F 15/10
U.S. Cl. 174—155 **15 Claims**

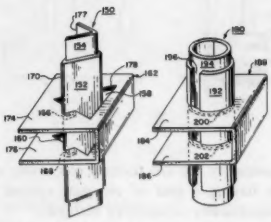
1. In an electrical device having a high voltage conductor and at least one mounting wall having a passage therethrough through which the high voltage conductor passes, a conductor support comprising:

a first channel member, formed from a sheet of dielectric material, inserted in said passage and at least partially surrounding said conductor; engaging means, formed in said first channel member intermediate the ends thereof engaging the edges of said mounting wall adjacent said passage along the periphery of said passage; and

a second channel member, formed from a sheet of dielectric material, inserted in said first channel member and at least partially surrounding said conductor,

said first and said second channel members cooperating to completely surround the conductor, said second channel





member having a first portion interposed between said conductor and the edges of said mounting wall defining said passage and a second portion interposed between said conductor and said first channel member,

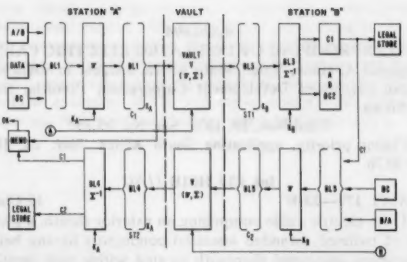
said second channel member being maintained in engagement with said first channel member by an interference fit, whereby said conductor is supported by said mounting wall.

4,326,098

HIGH SECURITY SYSTEM FOR ELECTRONIC SIGNATURE VERIFICATION

Willard G. Bouricius, Katonah, N.Y., and Horst Feistel, Lexington, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,455
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.08 **14 Claims**



1. A method for effecting a high security electronic signature verification operation in a computer based communication system comprising a central data communication network controller which includes a high security verify unit (Vault) therein said system further including at least two remotely

located terminals selectively connectable to said Vault over said data communication network and wherein said Vault and each of said terminals includes substantially identical key-controlled block-cipher cryptographic devices included therein and wherein said Vault has available therein means for obtaining the individual keys K_X of each terminal (or user X) connected to said system, said method comprising:

User A (sender) at a first terminal sending the Vault a first message (A⊕C1) including a first segment which comprises an identification code of the user A in clear format and a second segment C1 including at least an identification of the sender, user A, the receiver user B (A/B) and the message to be communicated to user B (Data) at a second terminal, said second portion being encrypted under user A's key K_A,

the Vault upon receipt of said message A⊕C1 obtaining the key K_A based on the first portion of said message A, and decrypting said message portion C1 using key K_A, verifying the identity of user A and upon a successful verification of the user A said Vault forming a second message to be sent to user B (receiver) at said second terminal, said second message including the message segment C1 from the first message and a new message segment comprising the identity A/B of the sender and receiver and Data which message is encrypted as a function of user B's key K_B,

user B upon receipt of said second message from the Vault decoding same and saving the message C1 in a 'Legal Store', and forming a third message B⊕C2 to be returned to the Vault said third message including the identity of user B in clear format as a first segment and a second segment C2 comprising at least the previous message segment C1 and the identity A/B of the sender and receiver, enciphering this second message segment under key K_B, and sending the message B⊕C2 to the Vault,

the Vault upon receipt of the message from the user B decrypting the message C2 to obtain segment C1 therefrom, said Vault then forming a fourth message C1⊕C2 and encrypting said message as a function of user A's key K_A and sending said message to user A,

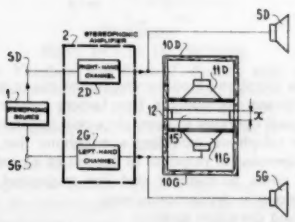
user A upon receipt of said fourth message from the Vault decrypting the message to obtain C1 and C2, and storing C2 in a 'Legal Store'.

4,326,099

LOW FREQUENCY CABINET, IN PARTICULAR FOR A TRIPHONIC AUDIO NETWORK

Michel Maille, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Feb. 20, 1980, Ser. No. 122,869
Claims priority, application France, Feb. 23, 1979, 79 04661
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 GA **8 Claims**



1. A low frequency acoustic cabinet, especially for frequencies of less than 200 Hz, comprising:

first and second loud-speakers, each having a front and rear face,

first and second enclosures, the rear face of the first and second loud-speakers radiating respectively in the first and second enclosures, and

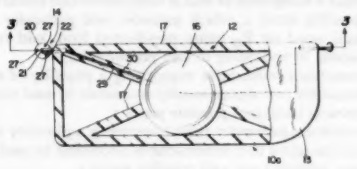
a single tuned cavity in which radiate the front faces of the two loud-speakers and which is connected to the outside by an opening of predetermined dimensions, said cavity forming a low pass filter, the high frequency limit of which depends on its volume and the amplitude of the sound signal being dependent of the surface of said opening, said first and second loud-speakers being adapted to receive the output signal from respectively right-hand and left-hand channels of a stereophonic amplifier.

4,326,100

COMBINATION AUTOMOBILE SUN VISOR AND SPEAKER ASSEMBLY

David D. Polacsek, 780 Oberlin Rd., Apt. 17, Elyria, Ohio 44035

Filed Apr. 24, 1980, Ser. No. 143,431
Int. Cl.³ H04R *1/02*; B60R *11/02*
U.S. Cl. 179—1 VE **9 Claims**



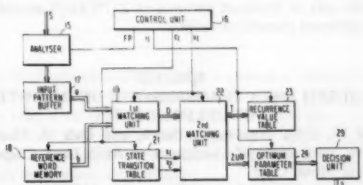
1. A combination automobile sun visor and speaker assembly comprising a thin bidirectional wafer-type speaker enclosed in a layer of acoustically transparent material to form an entire sun visor, the speaker comprising a lightweight acoustic panel supported by a frame, means for mounting the speaker above a windshield in place of a conventional sun visor, the mounting means comprising a pivotable sun visor mounting assembly attached directly to the speaker, and wiring extending from the speaker for connection to an external audio source.

4,326,101

SYSTEM FOR RECOGNIZING A WORD SEQUENCE BY DYNAMIC PROGRAMMING AND BY THE USE OF A STATE TRANSITION DIAGRAM

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,798
Claims priority, application Japan, Aug. 17, 1979, 54-104669
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **1 Claim**



1. A continuous speech recognition system for recognizing a word sequence which is substantially continuously spoken in compliance with a regular grammar and supplied to said system as an input pattern A defined by a time sequence of first through I-th input pattern feature vectors a_i arranged at equally spaced successive instants i (i = 1, 2, . . . , I), said regular grammar being defined by a state transition diagram for an initial state and a finite sequency of possible states x, said finite

sequence next following said initial state, said system comprising:

a reference word memory for memorizing first through N-th reference words B^c (c=1, 2, . . . , N), an n-th reference word B^n (n being representative of each of c) being given by a time sequence of first through J^n-th reference word feature vectors b_j^n (j^n=1, 2, . . . , J^n);

similarity measure calculating means for calculating at each instant m (m being representative of each of i) a group of similarity measures D(u, m, c) between a group of fragmentary patterns A(u, m)'s and every one of said reference words B^c, said group of fragmentary patterns A(u, m)'s being defined, by said each instant m and a plurality of previous instants u's preceding said each instant m among said successive instants i, as those parts of said input pattern feature vector sequence which consist of (u+1)-th through m-th input pattern feature vectors a_{u+1}'s to a_m;

a state transition table for memorizing, in connection with a particular y (y being representative of each of x), a previous state z and a set of words P_{zy} for a permutation of said previous and said particular states z and y, said previous state z being each of that at least one of said initial and said possible states x which precedes said particular state y, said word set P_{zy} being preselected from said reference words B^c according to said permutation;

a recurrence value table comprising a plurality of memory locations two dimensionally accessible by said successive instants i and said possible states x;

an optimum parameter table comprising a plurality of memory locations two dimensionally accessible by said successive instants i and said possible states x;

optimum parameter determining means for repeating calculation of a recurrence value $T_y(m)$ and determination of a set of optimum parameters $ZUN_y(m)$ at said each instant m and for said particular state y and storage of said recurrence value $T_y(m)$ and said optimum parameter set $ZUN_y(m)$ in said recurrence value and said optimum parameter tables, respectively, at memory locations accessible by said each instant m and said particular state y, said recurrence value $T_y(m)$ being calculated as a minimum of a plurality of sums of previous recurrence values $T_z(u)$'s and those of similarity measures D(u, m, c) of said group, respectively, which are calculated for the reference words belonging to said word set P_{zy}, said previous recurrence values $T_z(u)$'s being calculated at the respective previous instant u's and for the previous state z and stored in said recurrence value table at memory locations accessible by said previous instants u's and said previous state z, said set of optimum parameters $ZUN_y(m)$ being that one each of all the previous state z for said particular state y, said previous instants u's, and the reference words in said word set P_{zy} for which said minimum is calculated; and

deciding means for deciding a concatenation of reference words from the reference words stored in said optimum parameter table as said word sequence with reference to the sets of optimum parameters $ZUN_y(m)$'s stored in said optimum parameter table.

4,326,102

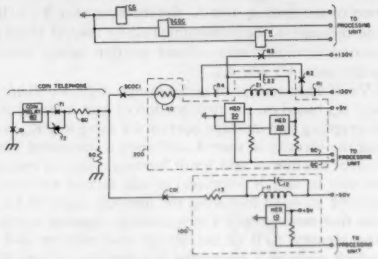
AUDIO DATA TRANSMISSION DEVICE WITH COUPLING DEVICE

David W. Culp, Huntington Beach, and Dale P. Mastell, El Toro, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

Filed Feb. 4, 1980, Ser. No. 118,394
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 C **2 Claims**

1. An audio data transmission device for coupling audio tone signals to a conventional telephone handpiece microphone comprising

a telephone handpiece muff comprising a cup-like configuration having two open ends, one end adapted to be slipped over the microphone end of the telephone handpiece and having an inside diameter to receive the handpiece microphone end in an acoustic sealing relationship, the opposite end of the muff having an internal flange spaced a distance from said one end to receive the telephone handpiece so as to completely enclose the microphone portion of the handpiece, said one end including a dependent, inwardly extending sealing element adapted to hug the telephone handpiece in an acoustic sealing relationship, said internal flange having a soft, acoustical sealing element secured thereto for acoustically sealing the microphone end of the handset when mounted in the muff, and



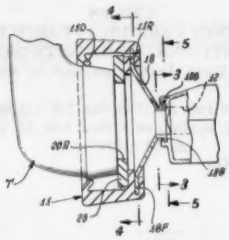
an audio tone signal transmitting element having two open ends with one end secured to said internal flange of the muff and having an inner diameter substantially the same as the diameter of the sound receiving portion of the telephone microphone, said audio tone signal transmitting element having a preselected length for transmitting audio signals therein and selected to minimize the tendency of the telephone microphone to generate second harmonics in response to the audio signals transmitted thereto.

4,326,103

COIN TELEPHONE MONITOR CIRCUIT

Kenneth H. Oehrig, Plainfield, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 2, 1980, Ser. No. 155,720
Int. Cl.³ H04M *3/22, 17/02*
U.S. Cl. 179—6.3 R **11 Claims**



1. A coin telephone monitor circuit for use in a telephone switching system including a line battery power supply, a processing unit operated to generate a coin ground test signal, and a coin telephone including a telephone line, said coin telephone operated in response to deposit of a predetermined number of coins, to connect said line to ground, said coin telephone monitor circuit comprising:

coin ground detection means;

switching means connected to said processing unit and said telephone line, operated in response to said coin ground test signal to connect said coin ground detection means to said telephone line;

an induction coil connected to said line battery supply, operated in response to current flow from said line battery

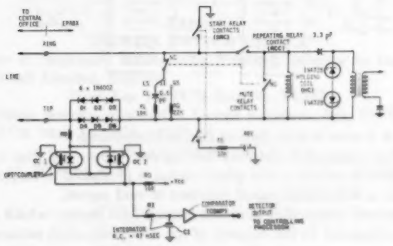
supply through said induction coil to said ground to generate a magnetic flux; and

a Hall effect device connected in magnetic field proximity to said induction coil, operated in response to said magnetic flux to generate an initial rate deposited signal.

4,326,104
CURRENT DETECTOR

Ephraim Bergida, Petah-Tikva, Israel, assignor to Tadiran Israel Electronics Industries Ltd., Tel Aviv, Israel

Filed Jul. 25, 1979, Ser. No. 60,606
Claims priority, application Israel, Apr. 5, 1979, 57011
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—16 AA **4 Claims**



1. A current detector in an automatic telephone exchange interconnection circuit, useful in interconnection of an automatic telephone exchange with a central office via TIP and RING leads, for detecting any one of the loop current, ringing current and TIP lead ground current said current delector comprising:

rectifying means coupled to the TIP lead for rectifying at least a portion of the current flowing therealong of either polarity; and

detector means for receiving the rectified output of said rectifying means and for providing a DC output signal indicating current passage along the TIP lead;

wherein said rectifying means produces a rectifier output, said detector means comprising an integrator for receiving and integrating said recitifier output to provide an integrated output, and a comparator for comparing said integrated output to a reference to produce said DC output signal indicating current passage along said TIP lead; whereby to detect any one of said loop current, said ringing current and said TIP lead ground current.

4,326,105
DIAL PULSE DETECTOR

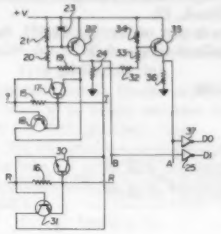
Brian J. N. Vaughan, and Brian J. Pascas, both of Ottawa, Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Feb. 8, 1980, Ser. No. 119,900
Claims priority, application Canada, Dec. 21, 1979, 342522
Int. Cl.³ H04Q *1/36*
U.S. Cl. 179—16 EA **17 Claims**

1. A dial pulse detection circuit comprising:

(a) means for detecting a first line current transition through a predetermined upper threshold, and for establishing a dial pulse leading edge in response to said detection,

(b) means for ignoring a first line current transition through a predetermined lower threshold which follows said first transition through said upper threshold but detecting a second line current transition through said predetermined lower threshold and for establishing a dial pulse trailing edge in response to its detection, and

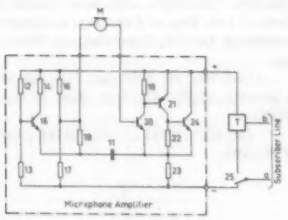


(c) means for ignoring a second line current transition through said upper threshold following said second line current transition through said lower threshold, whereby a complete dial pulse is established.

4,326,106
TELEPHONE AMPLIFIER CIRCUIT

Willy Minner, Schwaigern; Rainer Rodenheber, Leingarten, and Erhard Reitz, Oberursel, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs GmbH and Telefonbau und Normalzeit GmbH, both of Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,273
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904096
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—81 B **3 Claims**



1. In a microphone amplifier with a capactive degenerative feedback circuit in a telephone station furnished with current from the telephone network via a two-wire subscriber line, a speed-up circuit for initially charging a capacitor in the feedback circuit when supply voltage across the subscriber line is applied to the station, comprising:

a three-electrode transistor (**15**) having one electrode connected to one terminal of the feedback capacitor (**11**) the other capacitor terminal being coupled to one of the subscriber line wires;

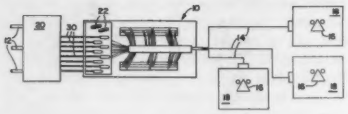
resistance means connected between the two subscriber line wires and connected to the control electrode of said transistor (**15**); and

the third electrode of the transistor (**15**) coupled to the other subscriber line wire.

4,326,107
COMMUNICATION SYSTEM AND MEANS FOR INTERCONNECTION OF SAME

Jiulio Perna, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 78,351, Sep. 24, 1979. This application Nov. 9, 1979, Ser. No. 92,865
Int. Cl.³ H04Q *1/16*
U.S. Cl. 179—98 **22 Claims**



1. An interconnection system for manually programming the assignment of individual communication channel identifiers of a multi-channel communication network to individual stations at different locations within the network service area, said system comprising:

a plurality of multi-circuit connectors adapted to receive and couple with communication trunk lines;

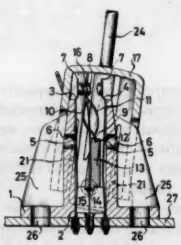
a plurality of connector members each including indicia identifiable with a given station within said network service area and having a mating portion and a terminal portion adapted to field terminate an information transmission cable associated with said given station; and

means for interconnecting said multi-circuit connectors and said connector members including a plurality of conductor means, each electrically coupled to and permanently affixed at one end to said multi-circuit connector and electrically coupled to and permanently affixed at its other end to a relocatable connector, each said relocatable connector including indicia identifiable with one of said communication channels and directly matable with the mating portion of any of said connector members, whereby the individual communication channels may be manually assigned to the individual communication stations.

4,326,108
HOOK SWITCH FOR TELEPHONE INSTRUMENTS

Helmut Barkow, Steinbach, and Karl Frank, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Telefonbau und Normalzeit GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,277
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926683
Int. Cl.³ H01H *21/24*; H04M *1/08*
U.S. Cl. 179—164 **13 Claims**

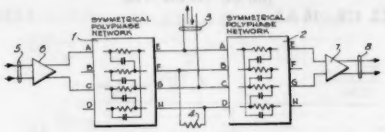


1. In a hook switch for telephone instruments having at least one set of outer contact springs (3, 4) and a movable switching balance (17) with an operation part (13) inside a case, the improvement comprising: a bounce contact spring (8) formed like a frame having a pair of center located spring blades (10, 11) which are arched outwardly in opposite directions and connected at their lower ends (9).

4,326,109
APPARATUS FOR COUPLING A TWO-WAY TRANSMISSION PATH TO A ONE-WAY TRANSMITTING PATH AND A ONE-WAY RECEIVING PATH

William F. McGee, Nepean, Canada, and Wasfy B. Mikhael, Morgantown, W. Va., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 11, 1980, Ser. No. 138,839
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **5 Claims**



3. A 2-wire/4-wire hybrid circuit comprising:

a first phase-shift network having two inputs and four outputs at which a four-phase signal is produced in response to a differential signal supplied to said inputs;

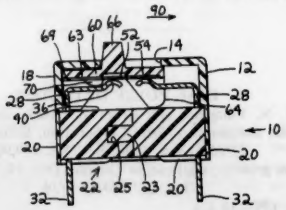
a second phase-shift network having four inputs, which are connected to the outputs of the first phase-shift network, and two outputs, the second phase-shift network being conjugate to the first whereby a differential signal supplied to the inputs of the first network and resulting in a four-phase signal at the outputs of the first network results in no signal being produced at the outputs of the second network; and

means for connecting the receiving wires and the transmitting wires of a 4-wire line respectively to the inputs of the first network the outputs of the second network, and means for connecting the wires of a 2-wire line to two inversely-related outputs of the first network, and means for connecting a balancing impedance, equivalent to the impedance of the 2-wire line, between the other inversely-related outputs of the first network.

4,326,110
PREPROGRAMMED SLIDE SWITCH ASSEMBLY

John Zdanys, Jr., Edwardsburg, Mich., assignor to CTS Corporation, Elkhart, Ind.

Filed Sep. 15, 1980, Ser. No. 186,912
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 R **11 Claims**



1. A slide switch comprising a cover having a plurality of walls forming a cavity therein, a plurality of sets of terminals disposed in said cavity, each terminal of said sets of terminals comprising a contact arm integral with a terminal portion extending exterior to the cavity, a transversely movable slider disposed within said cavity, a plurality of cams disposed along one side of said slider and each of said terminals having a

curved portion at an end thereof, each of said cams slideably engaging a respective one of said curved portions upon transverse movement of said slider for effecting a detent during said movement, a plurality of contactors secured to said slider, each of said contactors positioned adjacent a set of said terminals, said contactors being disposed in a predetermined pattern whereby at one position each of said contactors effects contacting with a preselected terminal of a respective set of terminals and thereafter at a second position each contactor contacts both terminals of a respective set of terminals whereby upon transverse movement of said slider each of said contactors either effects wipeable engagement with the other terminal of said set of terminals to complete a circuit across said set of terminals or wipeably disengages one terminal of said set of terminals to open a circuit across the set of terminals in a predetermined pattern for making and opening circuits across respective sets of said terminals.

4,326,111

INERTIA SWITCH DEVICE

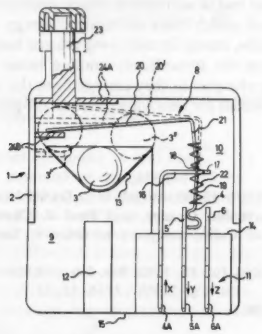
Peter R. Jackman, Basingstoke, England, assignor to Inertia Switch Limited, England

Filed Sep. 10, 1979, Ser. No. 74,143

Claims priority, application United Kingdom, Jan. 21, 1978, 1294/78; May 31, 1978, 19375/78

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **10 Claims**



1. An inertia switch device, comprising:

(a) a housing having a conical seat;

(b) an inertia mass located within the housing and movable from a rest position in response to acceleration or deceleration applied thereto, the inertia mass being formed by a spherical member located in the conical seat so as to be substantially independent of the direction of an applied acceleration or deceleration in a horizontal plane;

(c) rigid operating means mounted within the housing and including a first arm disposed to be struck and moved by the inertia mass when the acceleration or deceleration has exceeded a threshold value, and a second arm having a bifurcated portion;

(d) support means secured within the housing and having a bifurcated portion on which the bifurcated portion of said second arm is pivotally mounted for movement about a pivotal axis;

(e) first, second and third electrical contacts mounted within the housing;

(f) the first electrical contact being movable between first and second positions and disposed between and respectively engageable with the second and third electrical contacts, said first electrical contact having a bifurcated portion pivoted on said bifurcated portion of said support means; and

(g) resilient biasing means connecting said second arm to said first electrical contact, and lying within the bifurcated portions so that a center-line of the resilient biasing means can move to either side of said pivotal axis to bias said first electrical contact stably to one of said positions dependent on the position of the operating means.

4,326,112

MICROWAVE OVEN HAVING A TUBULAR L-SHAPED ANTENNA

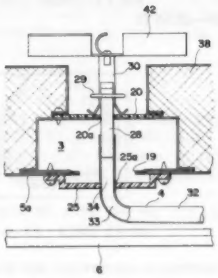
Junzo Tanaka, Fujiidera; Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 893,306, Apr. 4, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,169

Claims priority, application Japan, Oct. 14, 1977, 52-123761; Oct. 17, 1977, 52-124741

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F **5 Claims**



1. A microwave oven comprising:

conductive walls and a conductive door defining an enclosed heating cavity, one of said walls having an opening defined therein and serving as an outer conductive element for microwaves;

means for generating microwaves;

a waveguide having one end coupled to said generating means and the other end coupled to said opening in said one of the walls, said waveguide having a first hole therein opposite said opening, for supplying said microwaves from said generating means towards said opening in said one of the walls;

an antenna of a substantially tubular L-shaped configuration and serving as an inner conductive element for said microwaves, said antenna being constituted by a first tubular antenna portion, having one end disposed in said waveguide means and extending through said opening in said one of the walls in a direction perpendicular to the plane of said one of the walls, and a second tubular antenna portion radially extending from said first antenna portion and positioned within said heating cavity, said second antenna portion having its longitudinal axis parallel to and spaced from said one of the walls a distance equal to a quarter of the wavelength of the microwaves, whereby microwaves are radiated in part from said first antenna portion in a direction substantially at right angles to the longitudinal axis of said first antenna portion and in part from said second antenna portion in a direction substantially at right angles to the longitudinal axis of said second antenna portion;

a driving means for rotating said antenna including an elongated connecting member of a low loss dielectric material having a diameter not greater than the diameter of said first antenna portion, connected at one end thereof to said first antenna portion, passing through and rotatably supported by said first hole in said waveguide, whereby said second antenna portion rotates in a plane perpendicular to the axis of said first antenna portion; and

a supporting means of a dielectric material having a substan-

tially convex downward shape and further having a second hole in the central portion thereof and being attached to said one of the walls at a point spaced outwardly from the edge of said opening and disposed in a position covering said opening in said one of the walls, and further having said first antenna portion passing through said second hole therein and rotatably supporting said first antenna portion.

4,326,113

HEATER DISPOSED BELOW A TURNTABLE IN A COMBINATION MICROWAVE AND ELECTRIC OVEN

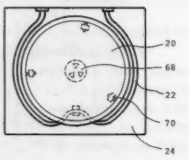
Munemitsu Toyoda, Osaka, and Koichiro Adachi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 830,887, Sep. 6, 1977, abandoned. This application Dec. 28, 1979, Ser. No. 107,889

Claims priority, application Japan, Sep. 6, 1976, 51-120467[U]

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 D **23 Claims**



1. In a combination microwave and electric oven energized by a power source and capable of operating in an electric heating mode and a microwave cooking mode, said combination microwave and electric oven including an oven cavity, a microwave generating means operatively associated with said oven cavity for generating microwave energy during said microwave cooking mode, a heating means disposed in said oven cavity for generating electric heat energy during said electric heating mode, and a turntable having a solid plate construction disposed at the lower section of said oven cavity for mounting a foodstuff thereon, at least the top surface of said turntable being a continuous surface devoid of any holes therethrough, said heating means further comprising:

an upper heating means disposed at a top wall of said oven cavity for emitting said electric heat energy; and

a lower heating means disposed between said turntable a bottom wall of said oven cavity for emitting said electric heat energy, a substantial portion of said lower heating means extending beyond the peripheral surface of said turntable thereby forcing substantially the entire amount of said electric heat energy being emitted from said lower heating means to pass around the peripheral surface of said turntable and thereby heating the environment within said oven cavity above said turntable, a negligible amount of said electric heat energy from said lower heating means passing through said turntable, said foodstuff being cooked during said electric heating mode solely by said electric heat energy disposed within the environment of the oven cavity above said turntable.

4,326,114

APPARATUS FOR MICROWAVE ROASTING OF COFFEE BEANS

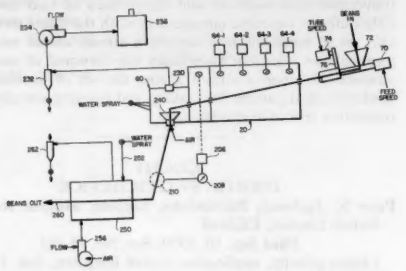
John E. Gerling, Cupertino, and John P. O'Meara, Orinda, both of Calif., assignors to Gerling-Moore, Inc., Santa Clara, Calif.

Division of Ser. No. 968,012, Dec. 11, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,388

Int. Cl.³ H05B *6/78*

U.S. Cl. 219—10.55 A **7 Claims**

1. In apparatus for roasting coffee beans, a microwave oven having a cavity including first incoming cavity portion in which the beans are heated and the moisture driven off and further heated to an initial roasting temperature, means forming a second final cavity portion in which the beans are roasted to a final predetermined degree of roast, separate means for supplying microwave power to said first and second cavity portions, means forming a cylindrical tube transparent to microwave energy disposed in said cavity at an angle to the horizontal angle therein, means for supporting and rotating said tube within said cavity, means for delivering coffee beans to the upper end of said tube, means for controlling the micro-



wave power to said cavity portions to obtain a predetermined degree of roast, means forming a roasted bean receiving chamber at the lower end of said tube in which microwave power is not applied and which traps microwave energy which leaks through said tube, means for removing roasted beans from said chamber, means for immediately cooling beans within said bean receiving chamber as they emerge from the lower end of said tube, and means for removing the roast off-gases from said chamber.

4,326,115

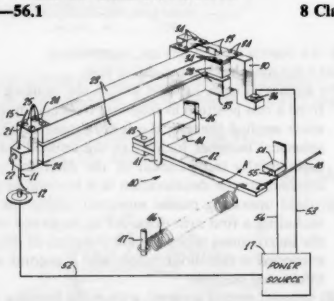
CONTINUOUS THRU-WIRE WELDING MACHINE

Stephen J. Bartholet, Orange, and Paul J. Chvostal, Buena Park, both of Calif., assignors to Odetics, Inc., Anaheim, Calif.

Filed Jul. 18, 1980, Ser. No. 169,996

Int. Cl.³ B23K *11/16, 11/32*

U.S. Cl. 219—56.1 **8 Claims**



1. A welding machine for welding a conductor to a terminal comprising:

a stationary support;

at least one arm having a known weight;

a flexible plate connected between one end of said arm and said stationary support for pivotally connecting said arm to said stationary support;

a first conductive electrode mounted on the other end of said arm, said terminal being positionable below said electrode; and

means for releasably supporting said arm with said first

electrode spaced from said terminal, said supporting means being adapted to release said arm whereby said weight of said arm moves said electrode into contact with said terminal and determines the force therebetween.

4,326,116

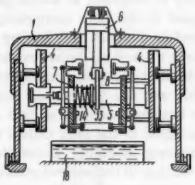
APPARATUS FOR ELECTRIC RESISTANCE HEATING AND COOLING TUBULAR WORKPIECES

Mikhail N. Bodyako, Leninsky prospekt, 76, kv. 105; Georgy A. Semenjuk, ulitsa Kharkovskaya, 74"B", kv. 22, both of Minsk; Garik E. Zverkov, ulitsa Oktyabrskoi revoljutsii, 24, kv. 40, Smolensk; Stanislav A. Astapchik, ulitsa Kalinovskogo, 56, kv. 79, Minsk; Anatoly F. Kosov, ulitsa Nikolaeva, 23, kv. 30, Smolensk; Sergei M. Kashulin, ulitsa Gorkogo, 143, kv. 151, Minsk, and Alexandr N. Baklanov, prospekt Gagarina, 1, kv. 21, Smolensk, all of U.S.S.R.

Filed Jun. 23, 1980, Ser. No. 162,100

Int. Cl.[3] B23K *37/04*; C21D *9/08*

U.S. Cl. 219—61.7 **5 Claims**



1. An apparatus for electric resistance heating and cooling tubular workpieces comprising:

a case;

vertical guides mounted on said case;

a carriage mounted on said vertical guides;

a drive for vertical movement mounted on said case and connected to said carriage;

a horizontal guide fixed on said carriage;

two brackets of which at least one is movable, is mounted on said horizontal guide and is provided with a stop;

a calibrated spring resiliently pressing said movable bracket in the direction opposite to the other of said other of brackets;

contact clamps fixed on said brackets and provided with mandrels to be inserted into the tubular workpiece;

a power cylinder mounted on said case and serving only to put said brackets closer for which purpose a rod thereof is in contact with said stop of said movable bracket;

a bath for a cooling medium mounted on said case under said brackets.

4,326,117

WELD BRAZE TECHNIQUE

William R. Kanne, Jr., Aiken; John W. Kelker, Jr., North Augusta, and Robert J. Alexander, Aiken, all of S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 15, 1975, Ser. No. 567,344

Int. Cl.[3] B23K *1/02, 1/04*

U.S. Cl. 219—85 CM **6 Claims**

1. The method of forming a high-strength metal joint between first and second metal members which comprises:

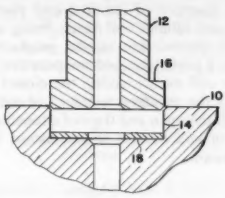
a. counterboring a first metal member to mate in interference fit with a hollow cylindrical metal member;

b. disposing a compatible braze metal between the end of said hollow cylindrical member and the bottom of said counterbore;

c. placing said hollow cylindrical metal member in position to mate in interference with the counterbore of said first metal member;

d. disposing said members within an evacuated welding apparatus; and

e. applying force and resistance weld energy within said apparatus to said metal members to impart relative motion



thereto until contacting said braze metal so that the energy generated forms a weld between said members and concurrently brazes the end of said hollow cylindrical member into said counterbore.

4,326,118

LASER BEAM WELDING APPARATUS

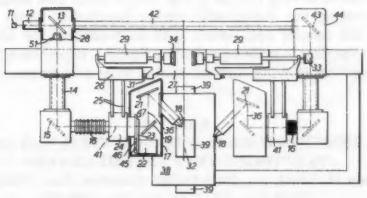
Jack J. Smith, 50 Pine Dr., Wokingham, England

PCT No. PCT/GB79/00049, § 371 Date Nov. 19, 1979, § 102(e) Date Nov. 19, 1979, PCT Pub. No. WO79/00807, PCT Pub. Date Oct. 18, 1979

PCT Filed Mar. 21, 1979, Ser. No. 173,134

Int. Cl.[3] B23K *27/00*

U.S. Cl. 219—121 LC **9 Claims**



1. Laser beam welding apparatus comprising means for directing a laser beam along a reference axis to a housing carrying a laser nozzle and reflectors for supplying the beam to the nozzle, a motor arranged to rotate the housing and the nozzle about the reference axis, and jig means arranged to hold a workpiece in a fixed position relative to the reference axis, characterised by a second housing carrying a second laser nozzle and reflectors for supplying the beam to the second nozzle and a second motor arranged to rotate the second housing and the second nozzle about the reference axis, the second housing being spaced from the first housing along the reference axis, and in which the jig means is arranged to locate the workpiece in the space between the two housings.

4,326,119

PORTABLE BATTERY OPERATED ELECTRIC SMOKE GENERATOR

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1980, Ser. No. 137,226

Int. Cl.[3] B01J *13/00*; F22B *1/28*; H05B *3/42*; B05B *1/24*

U.S. Cl. 219—272 **18 Claims**

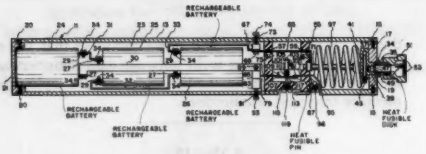
1. A portable battery operated smoke generator comprising, in combination:

a tubular housing having a first end plate at one end thereof, and a second end plate at the opposite end thereof, said first end plate having an aperture therein;

current source means mounted within said tubular housing adjacent said second end plate and having positive and negative terminals for producing a direct current;

tubular coil means mounted within said tubular housing adjacent said first end plate and having a closed end and an open end, with the open end thereof communicating with the aperture of the first end plate of said tubular housing, said tubular coil means being adapted for superheating a vaporizable smoke producing liquid stored therein to a predetermined temperature;

said tubular coil means having the closed end thereof connected to the positive terminal of said current source means and the open end thereof connected to the negative terminal of said current source means by electrical connection means;



said electrical connection means including switching means for energizing said tubular coil means from said current source means for a period of time sufficient to superheat the vaporizable smoke producing liquid stored in said tubular coil means; and

smoke discharging means connected to the open end of said tubular coil means and extending through the aperture of said first end plate for releasing said superheated liquid into the atmosphere as a vapor, said smoke discharging means having therein a heat fusible relief disk adapted for sealing the vaporizable smoke producing liquid within said tubular coil means until such time as the aforesaid vaporizable smoke producing liquid is superheated by the current flowing through said tubular coil means.

4,326,120

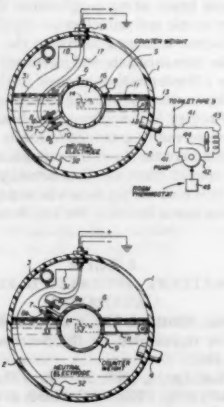
TEMPERATURE CONTROL SYSTEM FOR AN ELECTRODE TYPE LIQUID HEATER

Andrew H. Muhl, Sr., 2109 Huldy, Houston, Tex. 77019

Filed May 12, 1980, Ser. No. 149,237

Int. Cl.³ H05B *3/60;* F22B *1/30*

U.S. Cl. 219—286 **12 Claims**



1. An apparatus for heating an electrically conductive liquid comprising:

a tank for containing the conductive liquid; means for supplying the tank with liquid to be heated; means for removing heated liquid from the tank; means for maintaining a body of an electrically nonconductive gas over the liquid in the tank; at least two spaced apart electrodes of opposite polarity in the liquid in the tank when said tank contains liquid; means for applying a first voltage differential to the electrodes; a buoyant heating assembly having sufficient buoyancy to float in the liquid in the tank; means for mounting at least one of the electrodes with the buoyant heating assembly; means for movably mounting the buoyant heating assembly inside of the tank whereby the heating assembly rises or falls with the level of the liquid in the tank; means mounted on the means for mounting the buoyant heating assembly inside the tank and the buoyant heating assembly for allowing rotation of the heating assembly about a rotational axis on the heating assembly from a first position wherein the at least one electrode is at least partially immersed in the conductive liquid to heat the liquid to a second position wherein the at least one electrode is disposed in the body of nonconductive gas; and a thermostat for applying a rotational force to the heating assembly in response to a change in the temperature of the liquid in the tank comprising a thermostatic coil in the liquid in the tank and having first and second ends which move in arcuate paths responsive to temperature changes, the first end being connected to the buoyant heating assembly and the second end being fixed relative to the buoyant heating assembly so that a change in temperature of the liquid in the tank causes the coil to rotate the buoyant heating assembly about its rotational axis from the first position to the second position in response to an increase in temperature of the liquid and from the second to the first position in response to a decrease in temperature of the liquid.

4,326,121

ELECTRIC IMMERSION HEATER FOR HEATING CORROSIVE LIQUIDS

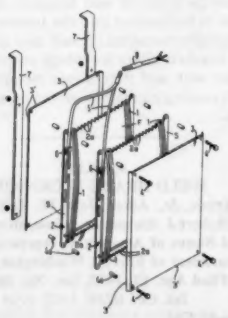
Dennis H. Welsby, Donning, and Alan G. Dewson, Workingham, both of England, assignors to E. Braude (London) Limited, Surrey, England

Filed Mar. 15, 1979, Ser. No. 20,721

Claims priority, application United Kingdom, Mar. 16, 1978, 10548/78; May 4, 1978, 17849/78; Dec. 12, 1978, 48188/78

Int. Cl.³ H05B *3/80;* F24H *1/22;* H01C *3/18*

U.S. Cl. 219—523 **5 Claims**



1. An electric immersion heater comprising, a support frame having opposed end portions and side members, said support frame defining a thin planar substantially rectangular frame, said side members provided with end sections extending beyond said frame end portions, an electrical resistance heating element wire wound around said frame opposed end portions to form a substantially flat wound assembly having opposite faces, said wire having conductive connections at each end and shrouded with an integral layer of an electrically insulating,

heat resistive material, an imperforate covering plate having peripheral edges and coextensive with and juxtaposed each said assembly face, and spacing and securing means engaging said side members and attaching said covering plates in a spaced manner relative said assembly faces with said peripheral edges of said two covering plates likewise spaced apart whereby, a gap is formed between said two plate peripheral edges allowing for free flow of fluid through said heater between said spaced apart covering plates throughout the entire extent of the gap between said spaced apart covering plates.

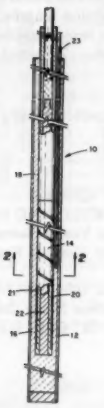
4,326,122
ELECTRIC HEATER FOR NUCLEAR FUEL ROD SIMULATORS

Reginald W. McCulloch, Knoxville; Chester S. Morgan, Jr., Oak Ridge, and Ralph E. Dial, Concord, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 14, 1980, Ser. No. 168,977

Int. Cl.³ H05B *3/44*

U.S. Cl. 219—544 **6 Claims**



1. An improved electric heater comprising an elongated hollow cylindrical housing, a hollow helically wound heating element disposed in said housing at a location radially inwardly spaced from the inner wall thereof and concentric with the longitudinal axis of the housing to define an annulus therebetween, boron nitride particulates filling said annulus with the basal planes of the boron nitride particulates being predominantly oriented in a radial direction with respect to said axis and with said boron nitride being at a density in the range of about 80 to 90% theoretical density, and a particulate mass comprising magnesia particulates with up to about 15 weight percent boron nitride filling the cavity defined within said hollow heating element with this fill being sufficiently tamped to provide a density of at least about 70% of theoretical density.

4,326,123
TELEPHONE CREDIT CARD SYSTEM

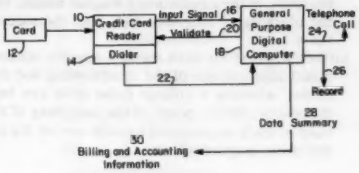
Harry L. Hosterman, Akron, Ohio, assignor to Charles Graham, Guatamala City, Guatemala

Filed Feb. 22, 1980, Ser. No. 123,904

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—380 **3 Claims**

1. A telephone credit card system which includes an automatic dialer including credit card validation information, a general purpose digital computer to receive the information from the dialer, record the same, and provide interface with the telephonic network, and means to record time and numerical data necessary in conjunction with a telephone call to charge it to the credit number validated which is further characterized by: inclusion of a microprocessor to interface between the dialer and the general purpose digital computer



operating in conjunction with ROMS, RAMS, and PIA's to transmit signals through the phone line to the general purpose digital computer.

4,326,124
LOCKING APPARATUS FOR PREVENTING UNAUTHORIZED ACCESS OR ACTIONS

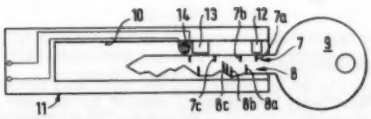
Rude Faude, Balingen, Fed. Rep. of Germany, assignor to BSG Schalttechnik GmbH & Co. KG., Balingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 963,054, Nov. 21, 1978. This application Mar. 28, 1980, Ser. No. 134,825

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912258

Int. Cl.³ G06K *7/08*

U.S. Cl. 235—382 **4 Claims**



1. An apparatus for actuating a security system such as a lock including an actuator element such as a key carrying at least one track of coded information related to the authorized actuation of the security system, receiver means for receiving the actuator element, and sensor means carried by the receiver means for scanning the coded information on the actuator element in a non-mechanical manner, wherein:

said at least one track of coded information comprises means for producing a given distribution of magnetic field lines on the actuator element;

the sensor means includes at least one electrical sensor coil, in which a sequence of electrical voltage pulses are induced by the distribution of magnetic field lines during movement of the actuator element in a given direction within the receiver means relative to the sensor means;

the improvement wherein said actuator element comprises a plurality of magnetic rods for generating the distribution of magnetic field lines forming the at least one code track, each magnetic rod having an outer shell portion which is magnetically hard, i.e., difficult to magnetize, and an inner core portion which is magnetically soft, i.e., easy to magnetize, whereby each magnetic rod can be switched from a first magnetic field state into a second magnetic field state under the influence of an external magnetic field of given minimum strength and polarity, and each magnetic rod can be switched from the second magnetic field state into the first magnetic field state under the influence of another external magnetic field of given minimum strength and opposite polarity, and wherein said receiver means comprises:

a complementary element which defines a recess or receptacle having an open end for receiving said actuator element;

first conditioning magnet means, carried by said complementary element and disposed adjacent the open end of the receptacle, for switching the plurality of magnetic rods into the first magnetic state; and

second drive magnetic means, disposed along the receptacle inwardly of the conditioning magnet means, for switching the plurality of magnetic rods into the second magnetic state;

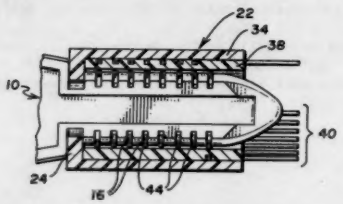
further wherein for each track, a specific sensor coil is disposed adjacent one of the conditioning and drive magnet means, whereby a voltage pulse spike can be induced in the sensor coil as a result of the switching of the magnetic state of each magnet rod by said one of the conditioning and drive magnet means.

4,326,125

MICROELECTRONIC MEMORY KEY WITH RECEPTACLE AND SYSTEMS THEREFOR

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Jun. 26, 1980, Ser. No. 163,307
Int. Cl.³ H04Q *9/00*; G06K *5/00*
U.S. Cl. 235—443 **18 Claims**



1. In combination:

a key-like device having head and insert body portions, the insert body portion being adapted for insertion into a receptacle and rotation therein to a "locked" position and including in cross-section:

a major dimension with opposing upper and lower arcuate surfaces; and

a smaller minor dimension with opposing side surfaces,

the insert body portion having a plurality of transverse grooves formed on the major surfaces thereof, said grooves including two opposing "guide" grooves adjacent to the head portion of the key and a plurality of spaced "contact" grooves, the "guide" grooves having a dimension greater than the "contact" grooves;

an electrical circuit element encapsulated within the key, the element including a plurality of electrical leads, each of which extend into one of the "contact" grooves and lie therein to form a plurality of electrical contacts; and

a receptacle defining a keyway for the insert portion of the key, the keyway including:

a plurality of spaced electrical contacts, each such keyway contact comprising a conductive lead positioned in the keyway for contacting a correspondingly spaced contact on the insert portion of the key upon rotation of the key to a "locked" position in the receptacle;

insertion guide means within the keyway for guiding the insert portion of the key during insertion of the key with the contacts thereof angularly displaced from the keyway contacts; and

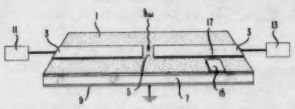
stop means within the keyway for stopping rotation of the key when the key has reached the "locked" position, the receptacle having a front end wall with a keyway opening therein, the keyway opening of the receptacle shaped to cooperate with "guide" grooves on the insert portion of the key to comprise rotation guiding and locking means for preventing withdrawal of key when the key is rotated and guiding the key during rotation to the "locked" position so as to bring the correspondingly spaced insert and keyway contacts together in contacting pairs.

4,326,126

HIGH SPEED PHOTODETECTOR

David H. Auston, Mountainside, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1979, Ser. No. 107,901
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 J **10 Claims**



1. A device comprising a substrate, a layer of an amorphous semiconductor disposed on said substrate, and having a thickness of at least two absorption lengths, first and second electrodes, said first electrode being disposed on said semiconductor, said second electrode being disposed on said substrate, and an active area,

characterized in that

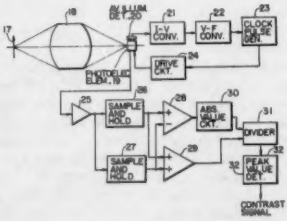
said amorphous semiconductor has a localized state density of at least $10^{18}/cm^3$.

4,326,127

FOCUS DETECTING DEVICE

Harumi Aoki, Kiyose, and Yoshio Sawada, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,803
Claims priority, application Japan, Jun. 18, 1979, 54-76578
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—204 **4 Claims**



1. An automatic focus detecting device for a camera comprising:

a self-scanning type photoelectric element array having a plurality of microphotoelectric elements, said self-scanning type photoelectric element being disposed at a position equivalent to the image forming plane of a lens;

a first memory circuit for holding an output signal from said self-scanning type photoelectric element corresponding to a minute photoelectric element for a first predetermined period of time;

a second memory circuit for holding an output signal from said self-scanning type of photoelectric element array corresponding to a microphotoelectric element for a second predetermined period of time spaced a third predetermined period of time from said microphotoelectric element the output of which is held by said first memory circuit;

a calculation circuit for producing an output signal corre-

sponding to the difference between outputs of said two memory circuits divided by the sum of said outputs; and

a peak value detecting circuit for producing a signal representing the peak value of said output signal of said calculation circuit in one scanning period.

4,326,128

INCREMENTAL ROTARY TRANSMITTER

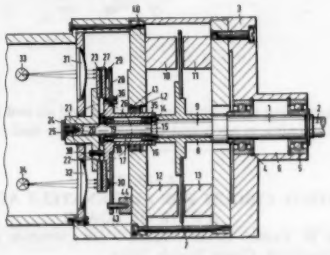
Ottokar Klein, Weiterstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 146,025

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921103

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—231 SE **2 Claims**



1. An incremental rotary transmitter comprising a pulse disc secured to a shaft for rotation therewith about the axis of the shaft and in a plane perpendicular to the axis, and a relatively stationary scanning grid arranged closely adjacent and parallel to the pulse disc,

wherein

the scanning grid is secured to a stationary sleeve which is internally freely mounted upon the shaft carrying the pulse disc and externally mounted in oscillation damping elements.

4,326,129

EVALUATION OF THE INTERACTION WITH RADIANT ENERGY OF SUBSTANCES TRAVERSED BY A BORE HOLE

Jacob Neufeld, 113 Cedar La., Oak Ridge, Tenn. 37830

Continuation-in-part of Ser. No. 904,591, May 10, 1978. This application May 12, 1980, Ser. No. 149,276

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—262 **21 Claims**

1. A system of logging a bore hole traversing subterranean formations, which comprises

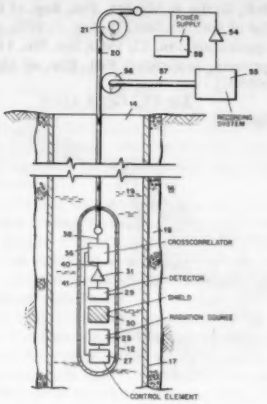
(a) a housing sized and adapted for passage through said bore hole;

(b) a source of radiant energy in said housing;

(c) a control element for said source to produce a substantially random or pseudorandom sequence of discrete bursts of radiant energy from said source to cause interactions of said bursts of radiant energy with the medium surrounding said source whereby characteristic radiations of said interactions are produced;

(d) a detector in said housing responsive to said radiations to produce first sequence of signals corresponding to said radiations; and

(e) a correlating means connected to said detector and responsive to said first sequence of signals for producing an



output signal corresponding to an impulse response function characteristic of said medium.

4,326,130

SHIELDING CONTAINER WITH NEUTRON SHIELDING FOR THE TRANSPORTATION AND/OR STORAGE OF SPENT FUEL ELEMENTS

Stefan Ahner, In der Gartel 4, 6458 Rodenbach 1; Peter Srostlik, Hainstrasse 56, 6454 Bruchkobel; Helmut Schleich, Auf der Sieb 4, 6456 Langenselbold, and Hans Diem, Durerstrasse 13, 8755 Alzenau, all of Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,188

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845129

Int. Cl.³ G21C *11/00*; G02B *5/00*

U.S. Cl. 250—506 **3 Claims**

1. A shielding container for the transportation and/or storage of spent fuel elements including neutron shielding jacket means for the outer surface of the container, said jacket means comprising a series of hollow members constructed from a good heat-conducting material, each of said hollow members being filled with a neutron shielding material, means for mounting said hollow members on the outer surface of the container so as to cover the surface of the container, each of said hollow members being provided with heat-conducting fin means, said mounting means being a steel belt means and said hollow members each being secured to said steel belt means, said steel belt means having at least one hinge means and at least one tensioning means to facilitate attachment of said steel belt means to the periphery and curve of said container.

4,326,131

MOBILE X-RAY APPARATUS

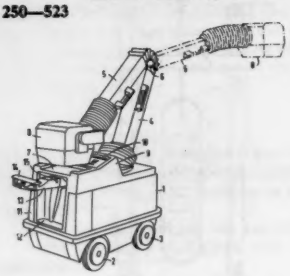
Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 940,376, Sep. 7, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,905

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 7730503[U]

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—523 **3 Claims**



1. An improved mobile X-ray unit with a wheeled carriage having four sides and a top, a two-part articulated arm connected at a first end to a first end of the top of the cart, a housing, containing an X-ray collimator and high voltage generator, pivotably connected to a second end of the two-part articulated arm, the two-part arm is movable to permit positioning of the housing, a steering bar pivotably attached to a side, at the opposite end of the carriage, the bar extends out from the side of the carriage essentially perpendicular thereto, and is located at a height from the floor so that an operator can use a handle attached to the bar to steer the cart, the improvement comprising:

a recess in the end of the top, adjacent the side to which the steering bar is attached, said recess has a lower essentially horizontal surface substantially corresponding in size to thebottom of the housing, said essentially horizontal surface is bounded by at least two spaced apart essentially vertical sides of a selected height and length joined by a third essentially vertical side, said three sides of said recess are adapted to receive a section of the housing with the bottom of the housing positionable adjacent said essentially horizontal surface when the housing is in a parking position to protect the collimator and high voltage generator from accidental impact while the unit is being moved.

4,326,132

ULTIMATE ENERGY WHEEL DRUM

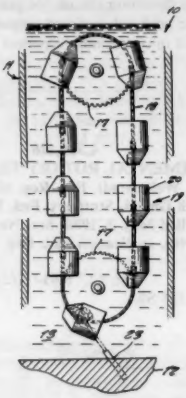
Aloys H. Bokel, 26091 Alice La., Hemet, Calif. 92343

Filed Sep. 24, 1980, Ser. No. 190,244

Int. Cl.³ F03B *9/00*

U.S. Cl. 290—1 R **3 Claims**

1. An ultimate energy wheel drum assembly, comprising, in combination, a tank filled with water, at least one wheel inside said tank affixed on a horizontal shaft supported rotatably free, a plurality of receptacles carried around a periphery of said wheel, and computerized air and gas injectors at the bottom of said tank for filling said receptacles with air and gas; said receptacles comprising capsules, and said injectors protrude upwardly at an inclined angle from said tank bottom, said



injectors being extendible for directing said air and gas through a rear opening in each said capsule and into said capsule.

4,326,133

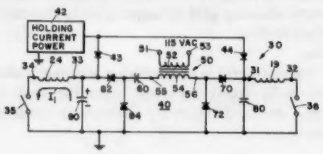
CONTROL CIRCUIT FOR ALTERNATELY ACTUATING A PAIR OF LOADS

James D. Tasma, Grand Rapids, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.

Filed Sep. 6, 1979, Ser. No. 72,839

Int. Cl.³ H01H *47/04*

U.S. Cl. 307—26 **19 Claims**



1. A circuit for alternately and repetitively actuating a pair of loads to provide continuous alternate operation of the loads, said circuit comprising:

a source of AC current;

a voltage doubling charge storage device coupled to said source;

a charge storage device;

a first pair of unidirectional conductive devices coupling said source of AC current to said voltage doubling charge storage device and said first charge storage device in a first voltage doubling circuit;

a second charge storage device;

a second pair of unidirectional conductive devices coupling said source of AC current to said voltage doubling charge storage device and said second charge storage device in a second voltage doubling circuit; and

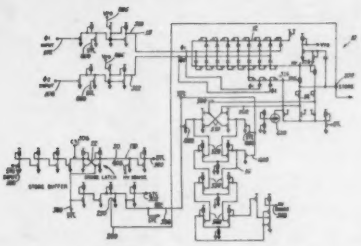
means for alternately coupling said first and second charge storage devices to first and second loads, said coupling means including first and second alternately actuatable switch means for alternately and repetitively coupling said first and second charge storage devices to first and second loads, respectively, to provide continuous alternate actuation of the loads and whereby when said first charge storage device is coupled to discharge through a first load to provide a peak initial current said second charge stor-

age device is charged and when said second charge storage device is coupled to discharge through a second load to provide a peak initial current said first charge storage device is charged.

4,326,134
INTEGRATED RISE-TIME REGULATED VOLTAGE GENERATOR SYSTEMS

William H. Owen, Mountain View; Richard T. Simko, Los Altos, and Wallace E. Tchon, Sunnyvale, all of Calif., assignors to Xicor, Inc., Los Altos, Calif.

Filed Aug. 31, 1979, Ser. No. 71,498
Int. Cl.³ H03K *3/57*
U.S. Cl. 307—268 **12 Claims**

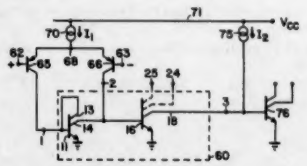


1. An integrated high voltage generating circuit comprising:
clock signal means for providing multiphase charge pumping signal,
charge pump means for utilizing said charge pumping signal for pumping charge packets along a plurality of discrete stages of increasing potential to provide an output potential at an output terminal which exceeds the potential of the charged pumping signal,
means for limiting said output potential to a predetermined reference potential, and
means for controlling the rise time of said output potential said means including means for minimizing the effect of any change in output impedance at said output terminal on said output potential rise time.

4,326,135
DIFFERENTIAL TO SINGLE-ENDED CONVERTER UTILIZING INVERTED TRANSISTORS

Robert B. Jarrett, and Wilson D. Pace, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 877,625, Feb. 14, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 125,409
Int. Cl.³ H01L *27/04*; H03K *19/091*
U.S. Cl. 307—355 **1 Claim**

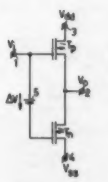


1. A differential input to single-ended output converter fabricated as an integrated circuit comprising:
(a) first and second transistors each having emitter, base and collector electrodes, the emitter electrodes of the first and second transistors being coupled to each other, the base electrodes of the first and second transistors being coupled to first and second input terminals, respectively, for receiving a differential input signal;
(b) a first current source connected between a power supply conductor and the emitter electrodes of the first and second transistors for supplying a current of a first magnitude;
(c) a first inverted transistor having emitter, base, and first and second collector electrodes, the emitter electrode being coupled to a reference conductor, the base and first collector electrodes being coupled to the collector electrode of the first transistor, and the second collector electrode being coupled to the collector electrode of the second transistor;
(d) a second inverted transistor having emitter and base electrodes, and having N collector electrodes where N is an integer greater than 1, the emitter electrode being coupled to the reference conductor, and the base electrode being coupled to the second collector electrode of the first inverted transistor;
(e) a source of injection current being connected between each of said N collector electrodes of the second inverted transistor and the power supply conductor and having a second magnitude which is 1/N times said first magnitude such that offset error associated with the differential input to single-ended output converter is substantially zero; and
(f) integrated injection logic means for performing a switching function including an inverted switching transistor, the inverted switching transistor having emitter and base electrodes and having a plurality of collector electrodes, the emitter electrode being coupled to the reference conductor and the base electrode being coupled to at least one of said N collector electrodes of the second inverted transistor.

4,326,136
THRESHOLD CIRCUIT USING COMPLEMENTARY FIELD EFFECT TRANSISTORS

Claude J. P. F. Le Can, Nijmegen; Maurice V. Whelan, Eindhoven, and Karel Hart, Nijmegen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 35,977
Claims priority, application Netherlands, May 11, 1978, 7805068
Int. Cl.³ H03K *19/094, 19/017*
U.S. Cl. 307—451 **16 Claims**



1. A threshold circuit comprising a first field-effect transistor of a first conductivity type with a gate electrode, a source electrode and a drain electrode, a second field-effect transistor of a second complementary conductivity type with a gate electrode, a source electrode and a drain electrode, an input terminal connected to the gate electrodes of the first and second field-effect transistors, an output terminal connected to the drain electrodes of the first and second field-effect transistors, first and second power supply terminals connected respectively to the source electrodes of the first and second field-effect transistors, first means for applying a supply voltage between the first and second power supply terminals, and second means for applying a direct voltage between the gate electrodes of the first and second field-effect transistors, which voltage has the same polarity as the supply voltage to be ap-

plied and is substantially equal in value to said supply voltage less the sum of the threshold voltages of the first and second field-effect transistors.

4,326,137

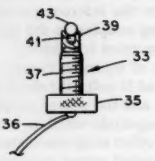
LOW-DRAG ELECTRICAL CONTACT ARRANGEMENT FOR MAINTAINING CONTINUITY BETWEEN HORIZONTALLY MOVABLE MEMBERS

R. Jack Brown, Clinton; Howard L. Gerth, Knoxville, and Samuel C. Robinson, Clinton, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 23, 1981, Ser. No. 228,035

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—12 10 Claims



1. An electrical contact arrangement, comprising:

upper and lower electrically conductive members which are separated by a clearance and which are mounted for relative horizontal movement, the lower member having a horizontal top surface portion which defines a cavity confronting a bottom surface of the upper member, and

a body of an electrically conductive liquid in said cavity, said body having an upwardly convex meniscus portion which spans said clearance and contacts said bottom surface, the surface tension of said liquid being sufficient to maintain said meniscus portion intact when said members are subjected to relative horizontal movement at speeds up to at least twelve inches a minute.

4,326,138

HAIR CUTTING APPARATUS

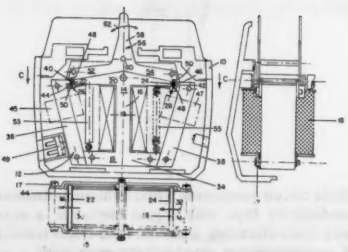
Shmuel Shtrikman, Rehovot, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Feb. 5, 1980, Ser. No. 118,966

Claims priority, application Israel, Feb. 8, 1979, 56623

Int. Cl.³ H02K *33/06*

U.S. Cl. 310—36 4 Claims



1. Hair cutting apparatus comprising:

a housing;

an AC electromagnet fixed in said housing and defining a fixed gap between facing stationary pole pieces thereof;

a pair of oppositely magnetized permanent magnets arranged in side-by-side arrangement disposed for reciprocating motion in said gap and between said stationary pole pieces;

a mounting member pivotally mounting said pair of oppositely magnetized permanent magnets about an axis fixed in said housing; and

apparatus for drivingly connecting said mounting member to a hair cutting head for reciprocal motion of cutting apparatus in the cutting head in response to reciprocating motion of said at least one permanent magnet in said gap.

4,326,139

ELECTROMAGNETIC DEVICES

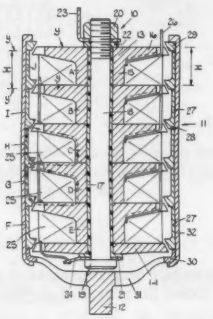
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 18, 1980, Ser. No. 160,482

Claims priority, application United Kingdom, Sep. 8, 1979, 31257/79

Int. Cl.³ H02K *15/00*

U.S. Cl. 310—42 8 Claims



1. An electromagnetic device of the kind comprising a stator structure which defines a plurality of axially spaced circumferentially extending pole having the same diameter, the stator structure including windings which when supplied with electric current cause adjacent ones of said pole pieces to assume opposite magnetic polarity and an armature which surrounds the stator structure, the armature being of annular form and having on its internal peripheral surface pole pieces complementary to the pole pieces on the stator structure characterised in that the stator structure comprises a stack of stator portions each defining a central portion for facial engagement with the adjacent portion, and a rim portion which defines a pole piece and the armature comprises a stack of annular portions each of which defines a pole piece whereby the stator structure and the armature can be assembled alternately and in sequence.

4,326,140

ELECTRIC MOTOR HAVING A HOOK-SHAPED COMMUTATOR

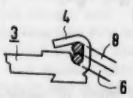
Rolf Rohloff, Lengfeld, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,523

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744419

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—234 8 Claims



1. In an electric motor having a segmented commutator in which each commutator segment has a contact surface and a

hook formed on the end of the segment nearest the motor winding, the bent, free end of the hook serving to fasten and contact at least two wires of the armature winding, the improvement comprising:

the hook formed at the face of the segment body nearest the winding, and

a depression in the segment body between the hook and the segment contact surface, the depression fitted to the diameter of a first coil wire for receiving the wire and positioning it in contact with the hook and, at least in part, below the level of the contact surface,

the body of the hook having a portion projecting radially relative to the axis of rotation of the commutator and adapted to maintain a second coil wire placed in contact with it radially above the first wire, and a portion of the hook being bent over the outermost wire in the direction of the depression.

4,326,141

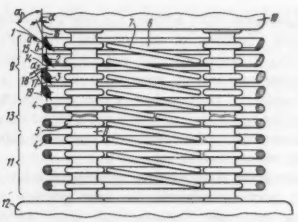
SUPPORTING INSULATING COLUMN OF HIGH VOLTAGE ACCELERATOR

Konstantin A. Rezvykh, and Valentin A. Romanv, both of ploschad Bondarenko, 1, Obninsk, U.S.S.R.

Filed Nov. 28, 1980, Ser. No. 211,108

Int. Cl.³ H02K *0/00*

U.S. Cl. 310—308 **1 Claim**



1. A supporting insulating column of a high-voltage accelerator having a high-voltage terminal, comprising:

a grounded footing;

a multitude of sections having operating potential distributed among said sections, said sections forming a high potential region adjoining said high-voltage terminal, a low potential region adjoining said grounded footing and an intermediate region;

said sections comprising exterior screening electrodes made as hoops whose outer surface produces the external surface of said sections, interior electrodes whereon said exterior electrodes are secured and frames whereon said interior electrodes are secured;

components of a voltage divider, arranged on said frames of said adjoining sections;

insulators separating said sections from one another;

at least some of said exterior electrodes, made as said hoops, having an oval profile in at least one of said regions oriented so that one vertex of the oval of said oval profile is directed inside the column, whereas the other vertex is directed away from the column, and the major axis of said oval extending therethrough forms with a tangent to said outer surface an angle read from the high protential end of the column;

said oval profile of at least some electrodes in at least one of said regions, formed by joining components at least two ovals so that said angle read from the high potential end of the column is produced between the major axis of the oval of one said component and the tangent to said outer surface of said sections, and another angle is obtained between the extension of the major axis running through the vertex of the oval of another said component, directed inside the column, and the same tangent to said outer surface of said sections, which is larger than the angle read from the high potential end of the column and is also read from said high potential end of the supporting column.

4,326,142

PIEZOELECTRIC RESONATORS

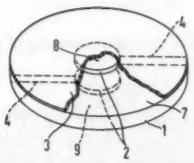
Werner Mattuschka, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,261

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845807

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—320 **6 Claims**



1. An operational piezoelectric resonator comprised of a thin body composed of a piezoelectric material and having two opposing major surfaces, at least one resonance electrode positioned on at least one of said major surfaces of such body, said body having regions on said major surfaces thereof free of said resonance electrodes and a relatively thin metal coating on said electrode and extending beyond said electrode onto said body regions free of electrodes, said metal coating having a maximum thickness, in nanometers, of about $682/\sigma_x$ wherein σ_x is the specific conductance of the metal forming said coating, said metal being gold.

4,326,143

PIEZOELECTRIC ACCELERATION PICK-UP

Werner Guth, Zug; Peter Wolfer, Kleinandelfingen; Hanspeter Dähler, Winterthur, and Reto Calderara, Bern, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed Oct. 13, 1978, Ser. No. 951,045

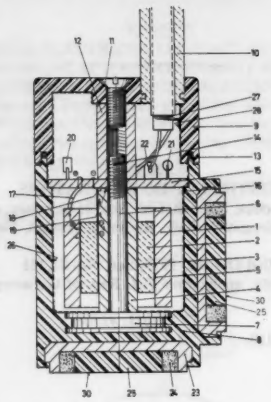
Claims priority, application Switzerland, Oct. 25, 1977, 13055/77

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—329 **9 Claims**

1. Vibration and acceleration pick-up comprising a mass sensor arrangement coupled with an electronic amplifier, the mass sensor arrangement and electronic amplifier being disposed within a synthetic material housing, the mass sensor arrangement being coaxially arranged about a support screw means with a mushroom shaped head which is anchored in the synthetic material housing and retains, spaces and stresses the sensor arrangement, the amplifier and a cover for the synthetic

material housing in one unit, the inner surface of the synthetic material housing being provided with a conducting layer



which is connected to the cable screening of an output cable of the electronic amplifier.

4,326,144

ROTATING ANODE X-RAY TUBE

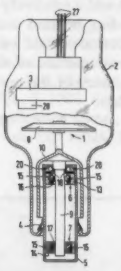
Guenter Appelt, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,128

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913336

Int. Cl.³ H01J *35/10*

U.S. Cl. 313—60 **2 Claims**



1. A rotating anode x-ray tube comprising an x-ray tube envelope (2), a rotating anode plate (8) in the envelope, a rotatable shaft (9) supporting said anode plate for rotating, a ball bearing assembly for rotatably mounting said shaft (9) comprising a remote bearing (7) remote from the anode plate having an interior race (17) on the exterior side of the shaft (9), and a proximate bearing (6) in proximity to the anode plate (8) having an exterior race (13) fixedly arranged relative to the envelope (2), and bearing cover means for keeping the lubricant in the bearing, said bearing cover means comprising an annular bearing cover configuration (18, 19) fixedly connected with said exterior race (13) and extending radially inwardly at the side of the proximate bearing toward said anode plate (8) to provide in conjunction with the centrifugal force on the lubricant during operation, a barrier to migration of lubricant in an axial direction toward said anode plate, characterized in that a step (25) at a thickening of the shaft (9) in directin of the plate (8), is additionally provided, and characterized in that the annular bearing cover configuration comprises a sheet metal ring (18) extending from the side of said exterior race (13) which is toward said anode plate (8), and extending radially inwardly to provide an inner edge encircling said shaft on the side of said step (25) remote from said anode plate, said annular bearing cover configuration further comprising a channel shaped annular part (19) including collecton means (23) on the side of said step toward the anode plate.

4,326,145

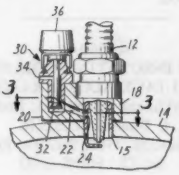
COMPRESSION RELIEF ADAPTER

Leslie W. Foster, Wayzata, and Henry B. Tillotson, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jan. 28, 1980, Ser. No. 116,269

Int. Cl.³ F02N *17/08*

U.S. Cl. 313—120 **6 Claims**



1. A compression relief adapter for relieving compression in a combustion chamber of an internal combustion engine, which adapter is suited for use with a spark plug having a threaded lower end and an upper end including a tightening nut and an enlarged portion below the nut, which adapter is also suitable for use with a pressure relief bleed valve having a threaded lower end and a selectively openable relief passageway therein, which comprises:

a one-piece body member that includes an inlet portion and an exit portion, wherein the inlet portion includes an opening extending therethrough sized to receive the lower end of the spark plug, wherein the inlet portion also includes a seat against which the enlarged portion of the spark plug bears when the threaded lower end of the spark plug is threadedly received in the combustion chamber to clamp the body member to the engine, wherein the exit portion is offset to one side of the inlet portion and includes an elongated bore therein, wherein the bore is threaded to receive the lower end of the bleed valve to couple the bleed valve thereto such that the bleed valve is operable in the threaded bore of the exit portion to communicate the threaded bore to atmosphere when the relief passageway of the bleed valve is opened, and further including a connecting passageway for connecting the bore in the exit portion to the combustion chamber of the engine.

4,326,146

BASE AND TERMINAL-PIN ASSEMBLY FOR ELECTRIC LAMPS AND SIMILAR DEVICES

Vernon L. Plagge, East Orange, and Clair M. Rively, Middletown Township, Monmouth County, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 2, 1980, Ser. No. 136,649

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 **10 Claims**

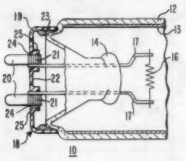
1. In an electric lamp or similar device that has an envelope with an end portion which includes a protruding lead-in conductor and is secured to a base structure, the improvement comprising the combination of;

an insulator component of plastic resin material that constitutes an end wall portion of the base structure and has an aperture therein, said lead-in conductor being of such length and being so arranged that the end thereof extends into the aperture in the plastic insulator component, and

a rigid metal pin of predetermined length having an end segment in force-fitted frictional engagement with the apertured portion of said plastic insulator component and mechanically locked thereby in positive electrical contact with the end of the lead-in conductor that is disposed in said aperture,

the end of said conductor being tightly clamped between the force-fitted portions of the metal pin and plastic insulator component, and the free end segment of said metal pin extending outwardly from the base structure and plastic insulator component a distance such that the pin constitutes an elongated exposed terminal of controlled size and configuration for the electric lamp or similar device.

4. In an electric discharge lamp of the low-pressure type having a vitreous tubular envelope with an end portion that has a pair of protruding lead-in wires and is secured to a base structure, the improvement comprising the combination of;



an insulator component of plastic resin material that constitutes an end wall portion of the base structure and has a pair of spaced apertures therein, said pair of lead-in wires being of such length and being so arranged that the ends thereof are substantially straight and extend into the respective apertures in the plastic insulator component, and

a pair of rigid metal pins of predetermined length having end segments in force-fitted frictional engagement with the apertured portions of said plastic insulator component and mechanically locked thereby in positive electrical contact with the substantially straight ends of the lead-in wires disposed in the respective apertures,

the substantially straight ends of the lead-in wires being tightly clamped between the force-fitted portions of the metal pins and plastic insulator component, and the free end segments of said pins extending outwardly from the base structure and plastic insulator component distances such that the metal pins constitute a pair of spaced elongated exposed terminals of controlled size and configuration for the electric discharge lamp.

4,326,147

SLOTTED SHADOW MASK HAVING APERTURES SPACED TO MINIMIZE MOIRÉ

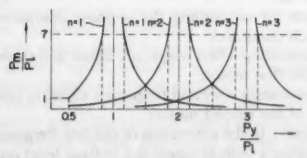
Takeshi Nakayama, Tokyo; Takehiko Nishimoto, Kodaira; Machio Kawashima, Mobara; Kozi Takahashi, Mobara, and Kuniharu Osakabe, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 714,198, Aug. 13, 1976, abandoned. This application Nov. 9, 1979, Ser. No. 92,976

Claims priority, application Japan, Aug. 18, 1975, 50-99534

Int. Cl.³ H01J *29/07, 29/32*

U.S. Cl. 313—403 **7 Claims**



1. A color picture tube having a shadow mask provided with a plurality of juxtaposed aperture rows each comprising a plurality of apertures aligned with a predetermined pitch P_y, wherein among a deviation Δy between the apertures of the adjacent aperture rows, a pitch P_l of scanning lines and said pitch P_y, there exist the following relations:

$$\frac{(m-0.35)P_y}{2n} \leqq \Delta y \leqq \frac{(m+0.35)P_y}{2n},$$

where n is 1, 2 or 3 and m is a positive odd number smaller than 2n, and

$1.17 \leqq P_y/P_l \leqq 1.50$ for $n(=1)$,

$1.50 \leqq P_y/P_l \leqq 1.75$ or

$2.33 \leqq P_y/P_l \leqq 2.50$ for $n(=2)$, and

$2.50 \leqq P_y/P_l \leqq 2.63$ for $n(=3)$.

4,326,148

GAS DISCHARGE DISPLAY DEVICE

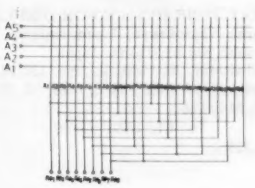
Takio Okamoto, Kusatsu; Tamisuke Atsumi, Kobe; Yoshio Nakagawa, Otsu, and Hidezo Akutsu, Kobe, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Jul. 10, 1979, Ser. No. 56,307

Claims priority, application Japan, Jul. 14, 1978, 53-86468

Int. Cl.³ H01Q *13/10*

U.S. Cl. 315—169.2 **3 Claims**



1. A gas discharge display device comprising an array of a number of parallel disposed anodes and an array of a number of parallel disposed cathodes said anodes and said cathodes being disposed crosswise with small discharging gaps filled with gas therebetween, thereby forming a gas discharging matrix having a number of gas discharging cells thereon at cross points of said anodes and said cathodes, wherein a discharging spot scans from a cell at one end of said gas discharging cells to a cell at the other end thereof by being transferred sequentially from one discharge cell to the next one,

wherein the cathodes are divided into a plurality of sub-arrays disposed in sequence from one side to the other side of the cathode array, each cathode in a sub-array being commonly connected to a cathode in the other respective sub-arrays, thereby forming a plurality of groupings of commonly-connected cathodes, and

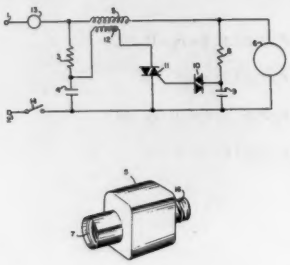
the improvement is that

adjacent cathodes in any one of the sub-arrays are respectively commonly connected to non adjacent cathodes in the others of the sub-arrays.

4,326,149
ADAPTOR FOR HIGH INTENSITY ARC DISCHARGE LAMPS

Elliott F. Wyner, Peabody; Orville R. Burr, Beverly, both of Mass., and Robert L. Garrison, Henniker, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 808,126, Jun. 20, 1977, abandoned.
This application Sep. 22, 1980, Ser. No. 189,550
Int. Cl.[3] H05B *41/16*
U.S. Cl. 315—289 2 Claims

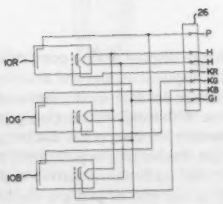


1. An adaptor for operation of a high intensity arc discharge lamp comprising: a housing containing an inductor having a trigger winding, an electronic circuit and an electrical outlet; an external electrical plug connected to said housing; said inductor being connected as a current limiting means between said electrical plug and outlet; the electronic circuit including a diac-triac condition and a resistor in series with a capacitor, one side of the diac being connected to the gate of the triac, the other side of the diac being connected to a point between the resistor and the capacitor; the triac being in series with the trigger winding; and said series resistor and capacitor being connected directly across said electrical outlet.

4,326,150
CATHODE RAY TUBE DEVICE FOR DISPLAY SYSTEM

Hiroo Kobayashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,163
Claims priority, application Japan, Mar. 24, 1979, 54-35917; Mar. 24, 1979, 54-35918
Int. Cl.[3] G09F *13/00*
U.S. Cl. 315—325 12 Claims

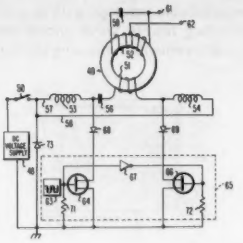


1. A cathode ray tube device used with a display system including a multitude of light sources arranged in a predetermined pattern to emit light in a plurality of colors, said device comprising one set of cathode ray tubes each including a monochromatic phosphor screen and an electron gun for generating an unfocused beam of electrons, said set of cathode ray tubes luminescing in at least red, green and blue in response to said unfocused beams of electrons respectively, a cylindrical housing having said set of cathode ray tubes fixedly disposed therein, and connecting means for connecting together common electrodes of said cathode ray tubes, said connecting means extending externally of said cylindrical housing whereby said cathode ray tube device forms each of said light sources.

4,326,151
SCANNING WAVEFORM GENERATOR FOR FLAT PANEL DISPLAY DEVICES

Sherman Weisbrod, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,908
Int. Cl.[3] H01J *29/74*
U.S. Cl. 315—410 15 Claims



1. In an electron display device having a plurality of internal support walls dividing said display device into a plurality of channels and including scanning electrodes for transversely scanning electron beams across said channels, a waveform generator for applying a triangular waveform to said scanning electrodes comprising:

a power supply including a constant current source;

means for coupling said power supply to said scanning electrodes;

charge storage means responsive to said constant current source;

means for providing a switching signal having alternate positive and negative polarities;

switching means responsive to said switching signal for alternately connecting said constant current source to said means for coupling means in opposite directions in response to said positive and negative polarities;

unidirectional conducting means between said switching means and said means for coupling for blocking current flow as said switching means changes polarities; and

means for discharging said means for coupling and said charge storage means in response to disconnection of said constant current source from said means for coupling.

4,326,152
SYSTEM FOR CONTROLLING THE IN-PHASE OPERATION OF A PAIR OF MOTORS

James M. Blackburn, Whitsett, and Douglas C. Paschall, Welcome, both of N.C., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 85,343
Int. Cl.[3] H02P *5/46*; B65H *57/28*
U.S. Cl. 318—85 11 Claims

1. A system for controlling the in-phase operation of two motors, which comprises:

means for generating a first frequency signal in response to the speed of the first motor;

means for generating a second frequency signal in response to the speed of the second motor;

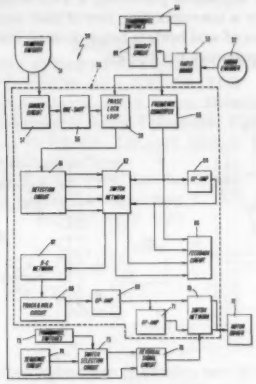
means responsive to the generation of the first frequency signal for developing a voltage signal at a voltage level representative of the speed of the first motor;

means for comparing the phase relationship between the first and second frequency signals and for developing a phase

relationship signal indicative of the phase relationship between the first and second frequency signals;

means for selectively establishing different amplification levels for the voltage signals;

means, responsive to the phase relationship signal, for adjusting the voltage signal to one of the amplification levels required to control and facilitate the adjustment of the speed



of the second motor until the first and second frequency signals are in phase;

means for controlling the speed of the second motor; and

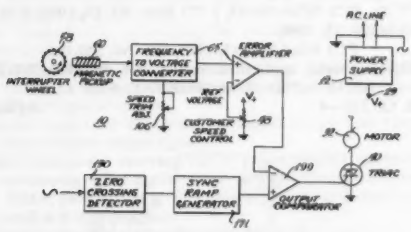
means for feeding the voltage signal from the adjusting means to the controlling means of the second motor to adjust the speed of the second motor until the first and second frequencies are in phase.

4,326,153

FEEDBACK MOTOR CONTROL CIRCUIT

Robert F. Contri, Villa Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1980, Ser. No. 167,627
Int. Cl.³ H02D 5/16
U.S. Cl. 318—327 **8 Claims**



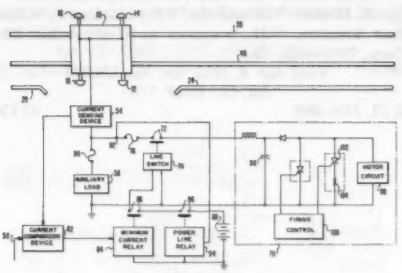
1. A feedback motor speed control circuit comprising a tachometer producing a time-varying signal having a frequency proportional to a rotational speed of an electric motor, means for converting said time-varying signal to a speed signal having an amplitude proportional to said frequency of said time-varying signal, means for processing said speed signal to produce an error signal, means for producing a periodic timing signal synchronized with the alternating current power source having a zero voltage crossing detector with at least one comparator which resets the periodic timing signal portion to zero at each half cycle of said alternating current power source, means for producing a trigger signal when said error signal and said timing signal are in a preselected relation, and means for supplying electric power to said electric motor in response to said trigger signal.

4,326,154

REGENERATIVE BRAKING CONTROL FOR A TRANSIT VEHICLE

Robert R. Lewis, Churchill Borough, and Donald C. Graham, Monroeville Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 8, 1978, Ser. No. 967,821
Int. Cl.³ H02P 3/14
U.S. Cl. 318—376 **6 Claims**



1. In regenerative braking control apparatus for a transit vehicle having a propulsion motor circuit and an auxiliary load and being operative in a brake mode with a power source conductor, the combination of:

first means for determining the connection of the propulsion motor circuit to said power source conductor for supplying regenerated current to said conductor during the braking operation of the vehicle,

second means for sensing the actual current supply to the auxiliary load by the power source conductor, and

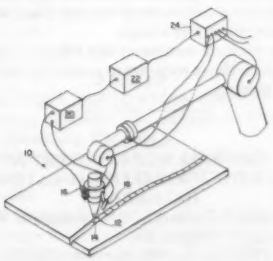
third means for comparing said actual current with a predetermined reference current and being operative with the first means to disconnect the propulsion motor circuit from the power source conductor when said actual current is less than the reference current.

4,326,155

SHOCKWAVE PROBE

Elmer L. Griebeler, 5111 W. Doherty Rd., West Bloomfield, Mich. 48033

Filed Jun. 3, 1980, Ser. No. 155,944
Int. Cl.³ G05B 19/33
U.S. Cl. 318—576 **20 Claims**



1. In a control system for a tool-positioning robot,

a work-sensing probe that senses the locus of work to be performed, including the loci of a continuum of such work, without physically contacting the work, comprising

means for generating a focused shockwave,

means for receiving the reflection of a focused shockwave,

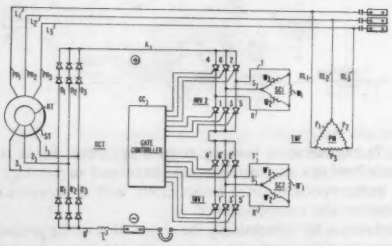
means for differentiating the time/pressure parameters of the original shockwave from those of its reflection,

and means for translating the observed parametric differences into an electric signal within the control system to direct the robot to position the tool at the sensed locus of the work.

4,326,156
ASYMMETRICALLY CONTROLLED STATIC SLIP-RECOVERY MOTOR DRIVE SYSTEM

Roger B. Herbert, Williamsville, N.Y., and Alan F. Wilkinson, East Kingston, N.H., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1980, Ser. No. 139,375
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—809 **11 Claims**



1. In a slip-recovery AC motor drive comprising an induction motor having a stator and a rotor; an AC power supply for said stator; and AC/DC converter coupled with said rotor for providing a DC link between terminals; one array of static controlled power devices connected between said DC link terminals and said power supply through a transformer, the combination of:

first and second secondaries and a common primary forming said transformer;

another array of static controlled power devices connected between said DC link terminal and said power supply through said transformer;

said one and another array being connected in series between said DC link terminals, each of said arrays providing a DC voltage and an AC current for a corresponding one of said secondaries;

asymmetrical gating means for controlling said first and second arrays to create a continuously varying phase shift between the AC currents of said arrays;

said common primary combining the effects of said first and second secondaries in response to control by said asymmetrical gating means.

4,326,157
DOUBLE INVERTER SLIP-RECOVERY AC MOTOR DRIVE WITH ASYMMETRICAL GATING PER HALF-BRIDGE

Roger B. Herbert, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1980, Ser. No. 139,377
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—809 **12 Claims**

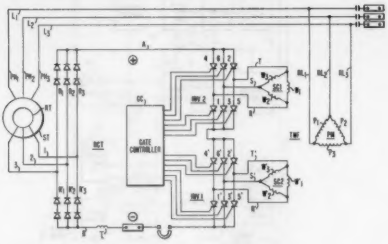
1. In a slip-recovery AC motor drive comprising an induction motor having a stator and a rotor; an AC power supply for said stator; an AC/DC converter coupled with said rotor for providing a DC link between terminals; one array of static controlled power devices connected between said DC link terminals and said power supply through a transformer, the combination of:

first and second secondaries and a common primary forming said transformer;

another array of static controlled power devices connected between said DC link terminal and said power supply through said transformer;

said one and another array being connected in series between said DC link terminals, each of said arrays consisting of a bridge of thyristors providing a DC voltage and an AC current for a corresponding one of said secondaries;

the thyristors of said bridges being divided into two groups of opposite polarities per bridge;



a first group of one polarity in one bridge and a first group of the other polarity in the other bridge being controlled under a common firing angle;

a second group of the other polarity in said one bridge and a second group of said one polarity in said other bridge being controlled under a common firing angle;

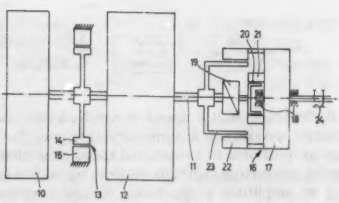
asymmetrical gating means for controlling said first and second array to create a continuously varying phase shift between the AC currents of said arrays;

said common primary combining the effects of said first and second secondaries in response to control by said asymmetrical gating means.

4,326,158
METHOD FOR ATTENUATING OSCILLATIONS OF A ROTATING SYSTEM

Herman Helgesen, Lund, Sweden, assignor to SAB Industri AB, Landskrona, Sweden

PCT No. PCT/SE80/00043, § 371 Date Jul. 15, 1980, § 102(e) Date Jul. 15, 1980
PCT Filed Feb. 13, 1980, Ser. No. 209,104
Claims priority, application Sweden, Feb. 14, 1979, 7901293
Int. Cl.³ G05D *13/06;* H02P *9/02;* F16F *15/18*
U.S. Cl. 322—4 **6 Claims**



1. A method for attenuating oscillations of a rotating element in a brakable system having a driving rotary element directly coupled to drive a driven rotary element at a selected rotational speed, wherein oscillations are induced by deviations of input torque tending to cause changes in the rotational speed, comprising the steps of,

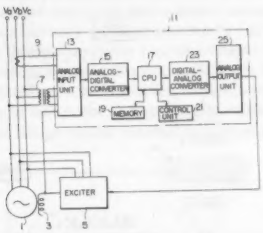
supplying a rotational energy storage means driven by said system which is selectively coupleable into said system to return rotational energy thereinto,

sensing changes in rotational speed,
energizing eddy current means as a function of changes in rotational speed,
and selectively actuating by said eddy current means braking and energy storage return into the system to maintain said substantially constant speed by attenuating oscillations wherein the sensing of changes of rotational speed is accomplished by establishing the derivative of the load angle of a rotating member in the system.

4,326,159
METHOD AND APPARATUS FOR CONTROLLING EXCITATION OF A GENERATOR

Hiroaki Aotsu, Nakaminato; Akira Isono, Hitachi; Tsutomu Inayama, Hitachi, and Mamoru Fukushima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,403
Claims priority, application Japan, Aug. 1, 1979, 54-97308
Int. Cl.³ H02P *9/10*
U.S. Cl. 322—19 **14 Claims**



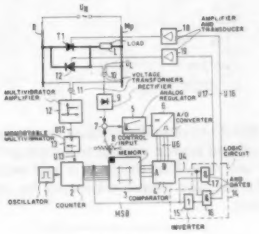
1. A method for controlling the excitation of a generator connected to an electric power system by controlling its field in response to the generator voltage comprising the steps of:
increasing, when a fault occurs in the electric power system, the field excitation such that it exceeds a level which is present before the fault occurs during a time interval after the fault is removed until the internal phase angle of the generator substantially reaches a peak value; and
decreasing the field excitation such that it falls below said level after the interval phase angle has substantially passed through the peak value.

12. Apparatus for controlling the excitation of a generator comprising:
first means for detecting, at predetermined periods, voltage, current, and field voltage of the generator connected to an electric power system;
second means for converting an output of the first means into a digital output signal;
third means for carrying out a predetermined operation processing of the digital output signal of the second means within each of the predetermined periods in accordance with a stored program;
fourth means for storing the program;
fifth means for storing the digital output signal of the second means and an output of the third means;
sixth means for storing data to be used as reference values for examination; and
seventh means for controlling the field excitation of the generator by the output of the third means,
said third means including means for computing the generator output power from the voltage and current, delivering an output for intensifying the field excitation of the generator to a predetermined value, when a computation result from the present period is decreased below a computation result from an immediately preceding period by more than a predetermined value, and thereafter delivering an output for depressing the field excitation such that it falls below a value which is present immediately before the excitation is intensified to the predetermined value, when a computation result of the generator output power which falls below a computation result from an immediately preceding period is detected.

4,326,160
CONTROL UNIT FOR STATIC CONVERTER

Rüdiger Braun, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 77,151
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842278
Int. Cl.³ G05F *1/455;* H02M *7/515*
U.S. Cl. 323—241 **1 Claim**



1. Apparatus for regulating the output of a static converter, the converter having valves controlled by firing pulses, by supplying firing pulses to the converter, comprising:
an oscillator;
a counter driven by the oscillator and having a predetermined sequence of address signals as an output;
a read only memory having an output and having an input coupled to the output of the counter, the memory being programmed to provide a sequence of digital outputs approximating a predetermined function in response to a predetermined sequence of address signals at the address input;
a comparator having first and second sets of inputs and having a drive control signal as an output, the first set of inputs being coupled to the output of the memory;
means, coupled to the second set of inputs of the comparator, for providing a digital control signal representing the drive of the static converter; and
logic means, having the drive control signal as an input and responsive to at least one output signal from the counter, for providing firing pulses to control the valves in the static converter.

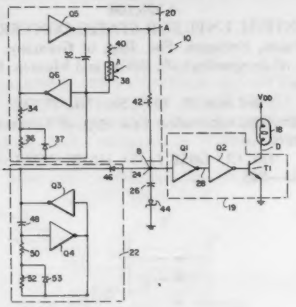
4,326,161
BATTERY REGULATION CIRCUIT

Earl R. Kreinberg, Marietta, Ga., assignor to Protection Services, Inc., Harrisburg, Pa.

Filed Oct. 17, 1979, Ser. No. 85,802
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—299 **9 Claims**

1. A circuit for regulating power delivered from a voltage source supplying a source voltage having a magnitude which varies to a load to maintain the average power consumed by the load substantially constant and independent of the magnitude of the source voltage to extend the useful life of said voltage source, comprising: a signal generator for producing a signal voltage, the magnitude of which varies between a first level and a second level, switching means having not more than a single signal input coupled to receive the signal produced by said generator and having a switching threshold which varies in a manner functionally related to the magnitude

of the varying source voltage, said switching threshold being between said first and second levels, said switching means being responsive to the magnitude of said signal voltage to switch from a first to a second state when the magnitude of the signal voltage bears a predetermined relationship to the

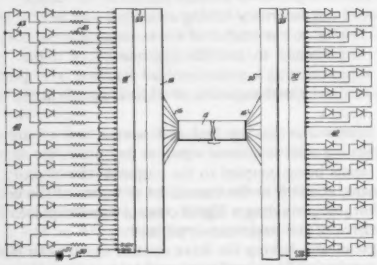


switching threshold of said switching means established by the magnitude of said source voltage to supply power to said load only when said switching means is in said second state, and to maintain the average power consumed by the load substantially constant.

4,326,162
CABLE TESTER WITH FIRST AND SECOND INTERENGAGING TEST MODULES

James H. Hankey, 1200 SW. 93 St., Miami, Fla. 33186

Filed May 2, 1980, Ser. No. 146,081
Int. Cl.[3] G01R *31/02*
U.S. Cl. 324—51 4 Claims



1. A cable tester device comprising:

a first and second module, said modules each having a main face,

each main face being companionately sized and configured for mating interengagement with each other in snug nested relation,

each of said main faces having a bank of connector adapters composed of male and female pin means to connect one of the modules to each end of a cable provided with a companionate connector, said banks of pin means being composed of mating pins electrically in engagement with one another when said modules are interengaged in nesting relation with one another,

a circuit means in said first module including a conductor electrically connected to each pin and electrically in series with a separate light emitting diode and resistor in series with one another,

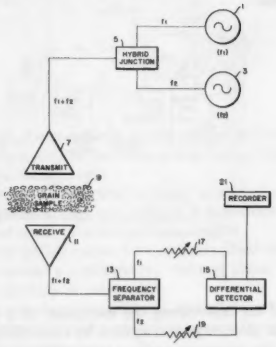
all of said conductors including said light emitting diodes and resistors in series therewith being in parallel with one another and in series with a main conductor circuit, said main conductor circuit including a battery in series with said parallel conductors to simultaneously energize the same and switch means for controlling energy flow from said battery through said circuit means of said first module;

the pin means of said second module being arranged in an array corresponding to the pins of said first module and said pin means of said array of said second module being in a pattern of odd and even pin means with an odd pin means between each even pin means, and a circuit in said second module connecting each adjacent odd and even pin through a light emitting diode in series therewith and comprising 24 separate circuits.

4,326,163
HIGH SPEED BULK GRAIN MOISTURE MEASUREMENT APPARATUS

Robert L. Brooke, 4700 Korvett Dr., Woodbridge, Va. 22193

Filed Jan. 30, 1980, Ser. No. 116,711
Int. Cl.[3] G01R *27/04*
U.S. Cl. 324—58.5 A 9 Claims



1. Apparatus for measuring the moisture content of bulk grains comprising:

a first oscillator generating signals having a frequency (f1);

a second oscillator generating signals having a frequency (f2);

transmitter means having an input coupled to said first and second oscillators and having an output adapted to produce output signals at a frequency (f1+f2);

receiver means adapted to produce said (f1+f2) signals at its output in response to said transmitter output signals, said receiver means being located opposite said transmitter such that said bulk grain whose moisture content is being measured passes between said transmitter means and said receiver means, said output signals from said transmitter means passing through said bulk grain to said receiver means; and

means coupled to said receiver output for separating said (f1+f2) signals into two separate signals and for immediately producing an output signal directly related to the difference in amplitude between said two separate signals.

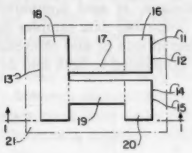
4,326,164
ELECTRICAL RESISTANCE CORROSION PROBE

Joe M. Victor, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 14, 1980, Ser. No. 130,322
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—71 R 20 Claims

1. A probe for monitoring the corrosion caused by a corrosive medium, said probe comprising a first corrodible electrical resistance element, a second corrodible electrical resistance element having a temperature-resistance characteristic similar

to that of said first element, said elements being in the shape of rectangular prisms, each of said elements being positioned and adapted to have one lateral face exposed to said corrosive medium; the dimension of the transverse cross-section of said second element which is not exposed to the corrosive medium being greater than that of said first element; junction means connecting said element in series at one end thereof; separate terminal means connected to each said element at the end



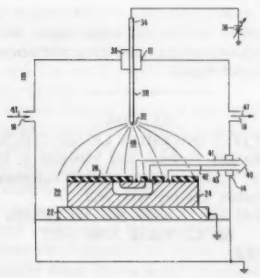
thereof opposite to the junction end; insulating means encasing said resistance elements except for said exposed lateral faces of said elements; and conductor means connected to said junction means and to said terminal means in a manner adapted to cause said first and second elements to function as adjacent but opposite resistance elements of a measurement bridge circuit and to enable connection of said probe to complementary elements of such measurement bridge circuit external to said probe.

4,326,165

CORONA CHARGING FOR TESTING RELIABILITY OF INSULATOR-COVERED SEMICONDUCTOR DEVICES

John R. Szedon, McKeesport, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1980, Ser. No. 110,980
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R **2 Claims**



1. A method for predicting certain electrical failures in semiconductor devices after long-term operation, said method comprising the steps of:

(a) measuring a predetermined parameter of said semiconductor device for determining a standard measure of said predetermined parameter;

(b) exposing said semiconductor device to first a positive corona discharge and then to a negative corona discharge;

(c) measuring said predetermined parameter for determining a comparison measure of said predetermined parameter before and after each corona discharge; and then

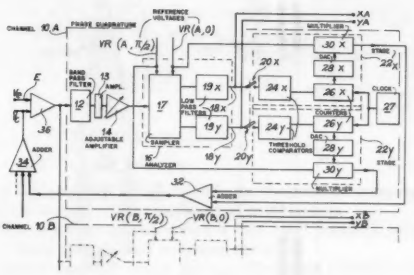
(d) comparing said standard and said comparison measurements of said predetermined parameter for predicting electrical failure in said semiconductor device after long-term operation.

4,326,166

CORRECTING CIRCUIT FOR DIFFERENTIAL PICK-UP, COMPRISING DIGITAL MEANS

Michel Pigeon, Bures sur Yvette, and Robert Saglio, Antony, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 4, 1979, Ser. No. 100,128
Claims priority, application France, Dec. 7, 1978, 78 344
Int. Cl.³ G01N *27/72*; G01R *33/14*
U.S. Cl. 324—225 **2 Claims**



1. In a circuit for automatically correcting an electric signal given by a differential pick-up likely to have a slight unbalance, said signal having a given frequency and containing a portion resulting from such unbalance, means for determining said portion and subtracting it from the signal given by said pick-up, said means comprising:

(a) a band-pass filter centered to said given frequency, followed by an adjustable gain amplifier;

(b) an analyzer fed by a reference voltage at said frequency and by a voltage in phase-quadrature and by the voltage delivered by said band-pass filter, said analyzer comprising a sampler fed by said reference signal and by said signal in phase-quadrature, said sampler having two outputs and two low-pass filters connected to said two outputs, said analyzer delivering two DC-voltages X and Y proportional to the two components of the voltage delivered by said band-pass filter which are respectively in phase and in phase-quadrature with respect to said reference-voltage;

(c) a first stage comprising: a threshold comparator fed by voltage X; a counter-back counter connected to said comparator; a clock for feeding said counter-back counter; a digital-analog converter connected to said counter; a multiplier with two inlets and one outlet, one of said inlets being fed by said reference voltage, while the other is connected to said converter;

(d) a second stage comprising: a threshold comparator fed by voltage Y; a counter-back counter connected to said comparator; a clock for feeding said counter-back counter, a digital-analog converter connected to said counter-back counter; a multiplier with two inlets and one outlet, one of said inlets being fed by said voltage in phase-quadrature with respect to said reference-voltage, while the other inlet is connected to said converter;

(e) an adder with two inlets and one outlet, one of said inlets being connected to the first stage multiplier outlet, while the other inlet is connected to the second stage multiplier outlet, the outlet of said adder being connected to the circuit inlet by mans of a phase inverter in common for all said channels.

4,326,167

TEST CIRCUIT FOR HIGH VOLTAGE APPARATUS

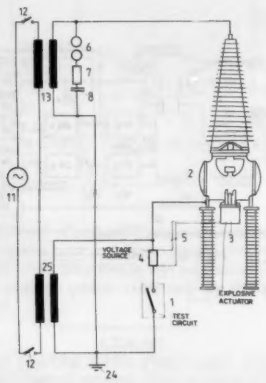
Werner Fehr, Winterthur, and Klaus Dieter Schmidt, Klingnau, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Sep. 19, 1979, Ser. No. 76,861

Claims priority, application Switzerland, Sep. 29, 1978, 10180/78

Int. Cl.³ G01R 31/02

U.S. Cl. 324—415 4 Claims



1. A test circuit for testing the circuit-making or circuit breaking capability of high voltage electrical apparatus, comprising:

a high voltage circuit having a first high voltage source connected to the apparatus to be tested;

a high current circuit having a source for generating a large current;

a high speed switch having an explosive actuator and being connected between said high current circuit and the apparatus to be tested for isolating said high current circuit from said high voltage circuit and the tested apparatus connected thereto during an open state thereof and for rapidly connecting said high current circuit to the tested apparatus upon ignition of said explosive actuator; and

a second voltage source disposed in said high voltage circuit and an electrical conductor for connecting said second voltage source with said explosive actuator to thereby enable said second voltage source to ignite said explosive actuator.

4,326,168

SIGNAL MONITOR SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Dec. 10, 1979, Ser. No. 101,961

Int. Cl.³ H03K 5/01

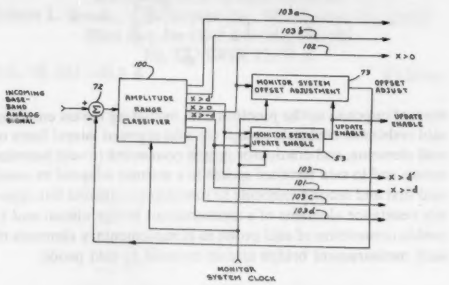
U.S. Cl. 328—162 7 Claims

1. An offset adjustment system for adjusting an input signal to shift about a reference signal level through combining a correction signal with said input signal to form a combined signal provided as a sequence of data samples, said offset adjustment system comprising:

an intended reference level crossing detector means adapted to receive said combined signal, and which has a detector output, said intended reference level crossing detector means being capable of determining, as a countable data sample, those of said data samples which correspond to and which separate members of acceptable pairs of other said data samples, a said pair of said data samples being acceptable if (i) one said member thereof has a value that substantially exceeds that value of said separating data sample corresponding thereto, and if (ii) said member thereof remaining has a value that is substantially less than that value of said separating data sample corresponding thereto, said intended reference level crossing detector means being capable of providing as a detector output signal an indication, at said detector output, as to which of said data samples are said countable data samples;

a comparator means, adapted to receive said combined signal, and which has a comparison output, said comparator means being capable of providing as a comparator output signal an indication, at said comparator output, as to which of said countable data samples have values which occur on a selected side of said reference signal level;

a counter means, connected to both said detector output and



said comparator output, and which has a counter means output, said counter means being capable of keeping a count total therein and being capable of being enabled to alter said count total by said detector output signal and said counter means being capable of being directed whether to increase or decrease said count total by said comparator output signal, said counter means being capable of providing at said counter means output, as said correction signal, a signal having a value which indicates whatever value said count total has reached in said counter means; and

a combining means connected to said counter means output and adapted to receive said input signal, said combining means being capable of combining said correction signal with said input signal.

4,326,169

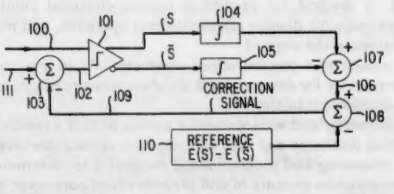
ADAPTIVE DECISION LEVEL CIRCUIT

Gerald L. Fenderson, Newton, and Mitchell A. Skinner, Seabrook, both of N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1980, Ser. No. 127,936

Int. Cl.³ H03K 5/08, 5/22

U.S. Cl. 328—162 6 Claims



1. In a system for receiving digital signals at a number of signal levels, an adaptive decision level circuit for quantizing said digital signals about a decision level interposed between successive ones of said signal levels comprising

means (101) for slicing said digital signals with respect to

said decision level and generating a complementary pair of signals (S and $\overline{S}$) each capable of taking on a high and low output value (x,y), and being further CHARACTERIZED BY,

means for integrating (104, 105, 107) the difference between said complementary pair of signals,

means (110) for generating the expected value of the difference between said complementary pair of signals based on said decision level, the recited expected value being equal to the difference between said high and low output value times a proportionality constant, said constant being a function of the number of said signal levels higher and lower than said decision level, and

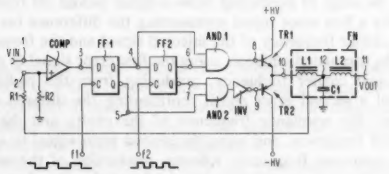
means (108) for comparing the integrated difference of said complementary pair of signals with the expected value of the difference between said complementary pair of signals and generating a correction signal therefrom to maintain said decision level at a constant position relative to said successive levels.

4,326,170

HIGH POWER AND/OR HIGH VOLTAGE SWITCHING OPERATIONAL AMPLIFIER

Allan Levy, Delray Beach, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 9, 1980, Ser. No. 157,321
Int. Cl.³ H03F *3/38, 1/34, 3/217*
U.S. Cl. 330—10 9 Claims



1. A switching operational amplifier comprising:

(a) a comparator having a first input, a second input and an output, said first input constituting the signal input for an AC input signal;

(b) a first bistable element having a data input, a first output and a second output of opposite signal state to the first output, wherein the signal state of the first output corresponds to the signal state of said data input, said data input of said bistable element being connected with the output of said comparator, said bistable element being triggered by a clock pulse signal having a pulse rate substantially higher than the frequency of the AC input signal;

(c) an amplifier stage having a pair of amplifier inputs each coupled to a different one of said first and second outputs of said bistable element and an amplifier output; and having a pair of alternately operating switch means, each of said switch means being connected by a control input to a respective one of said amplifier inputs and each being connected to said amplifier output and one of said switch means having an input terminal for connection to a positive voltage source and the other of said switch means having an input terminal for connection to a negative voltage source;

(d) a filter network having an input and an output, said input of the filter network connected to said amplifier output for integrating an output signal appearing at said amplifier output; and

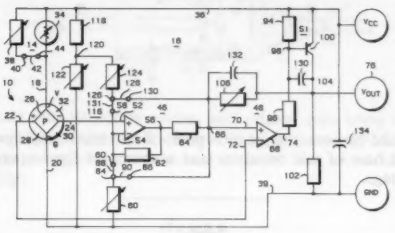
(d) means for providing feedback from the output of said filter network to said second input of said comparator.

4,326,171

TEMPERATURE COMPENSATING PRESSURE SENSOR AMPLIFIER CIRCUITS

Mark L. Shaw, Mesa, and Ronald J. Freimark, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 14, 1980, Ser. No. 140,070
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—256 8 Claims



1. An amplifier circuit suitable for temperature compensating the output voltage including in combination:

first amplifier means having a first input terminal, second input terminal and an output terminal;

second amplifier means having a first input terminal, a second input terminal and an output terminal;

first circuit means connecting said output terminal of said first amplifier means through a summing node to said first input terminal of said second amplifier means;

second circuit means for applying differential driving signals between said first input terminal of said first amplifier means and said second input terminal of said second amplifier means;

third circuit means connecting said output terminal of said second amplifier means to the output terminal of the amplifier circuit;

a first power supply conductor;

a second power supply conductor; and

temperature compensation means coupled to said summing node for enabling said output voltage of the amplifier to be substantially independent of temperature, said temperature compensation means including a first resistive element having one end connected to said first power supply conductor, a second resistive element having one end connected to a second end of said first resistive element and having another end connected to said second power supply conductor, and a third resistive element having one end connected to said second end of said first resistive means and a second end which can be selectively electrically connected to said summing node or to said second input terminal of said first amplifier means.

4,326,172

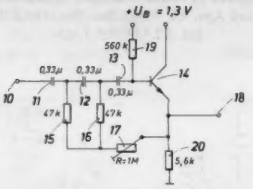
TUNABLE ACTIVE HIGH-PASS FILTER

Wolfgang Schmidt, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,077
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931482
Int. Cl.³ H03F *1/38*
U.S. Cl. 330—294 6 Claims

1. A tunable active high-pass filter comprising in combination: a transistor amplifying element, an input terminal for said filter; first, second and third series-connected capacitors connected between said input terminal of said filter and the base of said transistor; and a positive feedback path for said transistor including a first resistor connected between the junction point of said first and second capacitors and a common junction point, a second resistor connected between the junction point of said second and third capacitors and said common junction

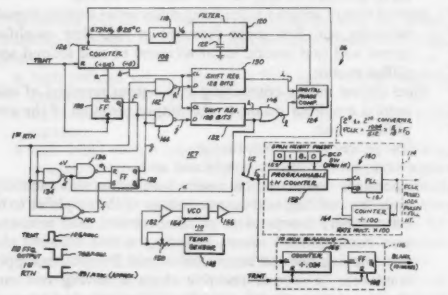
point, and a third, adjustable resistor connected between said common junction point and a terminal of said transistor which constitutes the output of said filter; and a fourth resistor connected between the junction point of said third capacitor and said base of said transistor and a source of fixed operating voltage.



4,326,173
DIGITAL PHASE LOCKED LOOP FREQUENCY CONTROL SYSTEM

Raymond A. Newman, Cheektowaga, N.Y., assignor to NP Industries, Inc., Tonawanda, N.Y.

Division of Ser. No. 20,218, Mar. 14, 1979, Pat. No. 4,254,482, which is a division of Ser. No. 818,656, Jul. 25, 1977, Pat. No. 4,145,914. This application Oct. 20, 1980, Ser. No. 198,487
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **3 Claims**



1. A digital phase locked loop system for maintaining an output signal frequency in the absence of the second of two input control signals which comprises

a variable frequency oscillator for providing said output signal and having an error signal input for controlling the output signal frequency,

digital phase comparator means having a pair of inputs and an output providing said error signal input in accordance with the D.C. valve thereof,

a counter for counting the cycles of said oscillator output signal, said counter having a dividing ratio such that the period of the output pulses from said counter equals the period between said two input control signals when said loop is locked,

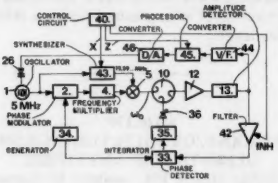
means for resetting said counter upon occurrence of the first of said two input control signals, and

digital logic means responsive to said first input control signal and said counter output pulses for providing a pair of data signals the first of which changes state periodically at a given rate and the second of which remains in the same state, said digital logic means also being responsive to the second of said input control signals for changing the state of at least one of said data signals when said second input control signal occurs, the one of said data signals which changes state depending upon the phase relationship of said input control signals, and changing the state of neither of said data signals if said second input control signal is absent, and means for applying said data signals separately to the pair of inputs of said phase comparator.

4,326,174
PASSIVE MASERS HAVING ALTERNATELY OPERATED OSCILLATOR AND CAVITY CONTROL LOOPS

Giovanni Busca, Neuchatel, and Helmuth-Hugo Brandenberger, Sugiez, both of Switzerland, assignors to Ebauches S.A., Switzerland

Filed Feb. 5, 1980, Ser. No. 119,139
Claims priority, application France, Mar. 9, 1979, 79 06105
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **12 Claims**

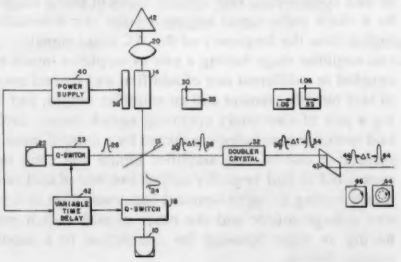


1. A process for controlling a passive maser having a resonant cavity which contains a medium capable of stimulated emission, and which is excited by an injected signal, comprising the steps of producing from a signal picked off from the cavity a first error signal representing the difference between the carrier frequency of the injected signal and the frequency of the stimulated emission, using the first error signal to adjust the said carrier frequency, producing from the picked-off signal a second error signal representing the difference between the resonance frequency of the cavity and the said carrier frequency, and using the second error signal to adjust the resonance frequency, wherein production of the second error signal is periodically inhibited and that the first error signal is produced only during the inhibition periods.

4,326,175
MULTI-COLOR, MULTI-PULSE LASER SYSTEM

George J. Dehney, Westford, Mass., and Gerald L. Spade, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 2, 1976, Ser. No. 746,989
Int. Cl.³ H01S *3/05, 3/10*
U.S. Cl. 372—106 **8 Claims**



1. A multi-color, multi-pulse laser system, comprising:

a pluarlity of laser cavities, each having a common section;

a laser medium disposed in the common section of said cavities;

means for supplying pump energy to said laser medium;

a plurality of Q-switches disposed in the noncommon sections of said cavities;

means for actuating said Q-switches;

a polarizer/beam-splitter disposed at the junction of said common and noncommon section of said cavities such that the output from said laser cavities is taken at said polarizer/beam-splitter in the form of multiple pulses; and

means for changing the wavelength of at least one of said output pulses.

4,326,176
SEMICONDUCTOR LASER DEVICE

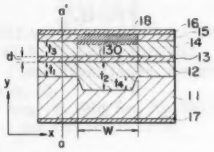
Kunio Aiki, Hachioji; Michiharu Nakamura, Tokyo, and Junichi Umeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1977, Ser. No. 786,758

Claims priority, application Japan, Apr. 16, 1976, 51-42469; May 26, 1976, 51-60009; Jan. 24, 1977, 52-5944; Jan. 24, 1977, 52-5945; Jan. 24, 1977, 52-5946; Mar. 9, 1977, 52-24806; Mar. 9, 1977, 52-24807

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **37 Claims**



1. In a semiconductor laser device comprising a semiconductor body of a first conductivity type having a major surface and a plurality of contiguous semiconductor layers disposed on said major surface of said body, said plurality of contiguous semiconductor layers being comprised of:

(i) a first semiconductor layer having a laser active region, a pair of end surfaces parallel to each other so as to form a cavity resonator, and two opposite plane surfaces, a first surface of which faces towards said major surface of said body and second surface of which faces away from said major surface of said body;

(ii) a second semiconductor layer disposed on said first surface, comprised of a material having a band gap broader than that of said first semiconductor layer, and having a thin region having a thickness t_1 as small as $3\times$(the distance r in which an evanescent wave along said first surface decays by 1/e) or less and a thick region having a thickness t_2 larger than 3r, and

(iii) a third semiconductor layer disposed on said second surface comprised of a material having a band gap broader than that of said first semiconductor layer.

4,326,177
GAS LASER TUBE

Tetsuro Ohtani, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1979, Ser. No. 103,892

Claims priority, application Japan, Dec. 15, 1978, 53-156116; Dec. 15, 1978, 53-156117

Int. Cl.³ H01S *3/03*

U.S. Cl. 372—92 **12 Claims**

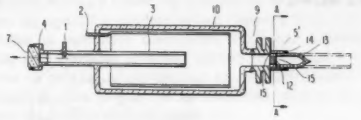
1. A gas laser tube comprising:

an axially elongated gas-containing enclosure;

a pair of mirrors disposed at the opposite ends of said enclosure and forming an optical resonator, at least one of which mirrors is a total reflection mirror;

a cylindrical member axially disposed within and at one end of said enclosure holding said total reflection mirror with a gap space between at least one part of said total reflection mirror and said cylindrical member; and

an exhaust pipe coupled coaxially to said cylindrical member and disposed oppositely in said enclosure with respect to



said total reflection mirror, said exhaust pipe being airtightly sealed-off and wherein said gap space provides a gas passageway between said enclosure and said exhaust pipe.

4,326,178
GAS DISCHARGE LASER

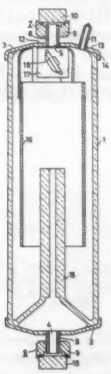
Hans G. Van den Brink, and Theodorus F. Lamboo, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,207

Claims priority, application Netherlands, Aug. 3, 1979, 7905969

Int. Cl.³ H01S *3/05*

U.S. Cl. 372—61 **5 Claims**



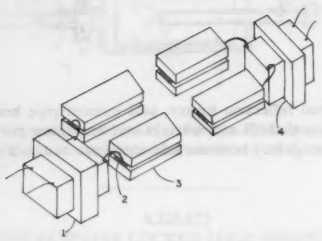
1. A gas discharge laser comprising a glass cylindrical discharge vessel containing a gas including an active lasing medium, means including a pair of reflectors at opposite ends of the discharge vessel for defining a resonant cavity, means including first and second electrodes for establishing an electric discharge in said gas, a metal cap in the shape of a truncated cone sealing one end of the discharge vessel, the truncated cone metal cap having an apical surface and a conical surface, a metal exhaust tube eccentrically located in the conical surface of the metal cap, and a reflector member including one of said reflectors and mounted in the center of the apical surface of the truncated cone metal cap.

4,326,179

ELECTRICAL POWER LINE TRANSIENT NOISE FILTERING DEVICE

Theodore Lasar, 40 First Ave., New York, N.Y. 10009

Filed Aug. 15, 1980, Ser. No. 178,303
Int. Cl.³ H03H *7/09, 7/24*
U.S. Cl. 333—177 **1 Claim**



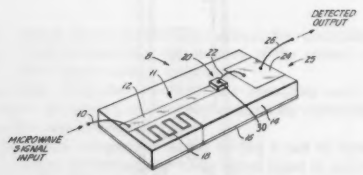
1. A filter for attenuating transient noise pulses in the supply line for sensitive electronic equipment consisting of:
   (a) a step up transformer to which the input power line is connected;
   (b) two continuous strips of resistive material each connected to one end of the high voltage secondary of said transformer;
   (c) material of dielectric constant exceeding that of air enclosing the said resistive strips; and
   (d) a step down transformer mounted as far as possible from the first transformer to the high voltage winding of which the two resistive strips are connected and from the low voltage winding of which power is taken for the sensitive electronic equipment.

4,326,180

MICROWAVE BACKDIODE MICROCIRCUITS AND METHOD OF MAKING

Romano I. Ferri, Westport, Conn., assignor to Microphase Corporation, Cos Cob, Conn.

Filed Nov. 5, 1979, Ser. No. 91,521
Int. Cl.³ H01P *3/08, 11/00;* **H01L** *23/50, 21/461*
U.S. Cl. 333—246 **10 Claims**



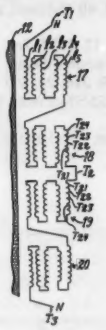
1. The method of making a microwave microcircuit containing a backdiode comprising the steps of:
   integrating an unprocessed semiconductor diode chip with other circuit components of a microcircuit,
   causing said other circuit components of the microcircuit to be resistant to the effects of a predetermined etchant,
   providing an alloyed metal dot on the exposed upper surface of the semiconductor material of said chip,
   connecting said metal dot into the microcircuit,
   dipping the whole pre-joined and integrated microcircuit into the predetermined etchant,
   monitoring the e/i characteristics of the semiconductor diode chip during the etching,
   removing the pre-joined and integrated microcircuit from the etchant when the desired backdiode characteristics have been obtained, and
   rinsing off all traces of the etchant from the microcircuit, thereby completing the microwave microcircuit containing a backdiode.

4,326,181

HIGH VOLTAGE WINDING FOR DRY TYPE TRANSFORMER

Benjamin F. Allen, Rome, Ga., assignor to General Electric Company

Continuation of Ser. No. 852,795, Nov. 18, 1977, abandoned.
This application Feb. 11, 1980, Ser. No. 120,245
Int. Cl.³ H01C *33/00*
U.S. Cl. 336—12 **2 Claims**



1. A compact high voltage transformer of the type having three coil assemblies each of which consists of a low voltage coil concentrically arranged around a core and a high voltage coil, the high voltage coil comprising:
   a multisectional coil having five layers of wire in each of four coil sections, the high voltage coils being arranged in an electrical wye connection on a coil support with a last layer of one section being electrically connected with a first layer of another section, said four coil sections consisting of a first pair of coils connected in series and a second pair of coils connected in series, said first and second coil pairs being electrically connected in parallel;
   a top terminal connection proximate a top core yoke;
   a bottom terminal connection proximate a bottom core yoke; and
   a plurality of terminal connections intermediate the high voltage coil to provide electrical connection to each of said pairs of coil sections for providing reduced spacing between said high voltage coil and said low voltage coil and between said high voltage coil and said coil support and said top and bottom core yokes.

4,326,182

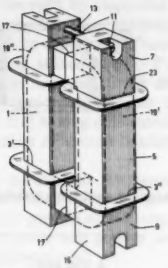
C-CORE TRANSFORMER

Werner Klaus, Nauborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,890
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914447
Int. Cl.³ H01F *27/26, 27/30*
U.S. Cl. 336—198 **4 Claims**

1. A transformer comprising first and second separate C-shaped ferromagnetic core parts with each core part comprising a core leg including a substantially straight elongate section and first and second bends at opposite ends of the elongate section, said core parts having end faces in contact at first and second spaced locations so as to form a substantially closed core, first and said coil formers moulded around the first and second core parts, respectively, so as to be rigidly connected to the respective core legs and arranged so as not to enclose said

locations where the first and second core parts contact each other, each said coil former comprising extensions which enclose the bends of the core iron adjoining the core leg and



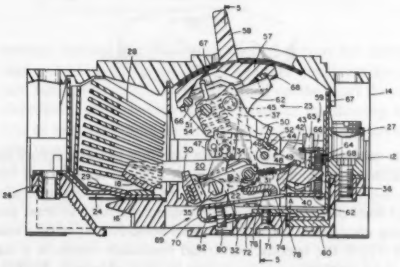
which extend into the vicinity of the dividing line between the first and second core parts and further including fixing elements for mounting the transformer.

4,326,183

CIRCUIT BREAKER WITH SELF CONTAINED ADJUSTABLE BIMETAL

James A. Tharp, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed Aug. 29, 1980, Ser. No. 182,568
Int. Cl.³ H01H *71/16*
U.S. Cl. 337—70 **6 Claims**



1. An electric circuit breaker comprising:
an insulating case;
a line terminal carried by said case;
a load terminal carried by said case;
a stationary contact connected to said line terminal;
a movable contact arm in said case pivotally supported adjacent one end of said arm and connected to said load terminal;
a movable contact carried by said contact arm adjacent an opposite end of said arm for engagement with said stationary contact to extend an electrical connection between said line terminal and said load terminal in response to said contact arm being in one pivotal position and to interrupt said connection in response to said contact arm being in an other position;
a toggle mechanism including a main toggle spring, said mechanism having a first position in which said spring is energized and said contact arm is in said other position and a third position in which said spring is deenergized and said contact arm is in said other position;
a latch having a first latch position for retaining said toggle mechanism in either said first or said second position, said latch biased toward a second latch position to enable release of the energy of said spring for moving said toggle mechanism to said third position;
a trip crossbar supporting said latch in said first latch position and rotatable to release said latch whereby said toggle mechanism moves to said third position;
a generally U-shaped bimetal connected intermediate and in series with said contact arm and said load terminal;
said bimetal having a lower leg fastened to said frame and an upper leg spaced a predetermined distance from said trip crossbar in operative association with said crossbar to rotate said crossbar to effect release of said latch in response to heating of the bimetal to a predetermined temperature by the passage of an electrical current of a selected magnitude therethrough;
said lower leg having portions defining a threaded aperture; a screw threaded through said aperture; and an insulator interposed between said screw and said upper leg.

4,326,184

ELECTRIC CUTOUT

Robert E. Murdock, Stone Mountain, Ga., assignor to Kearney-National Inc., Atlanta, Ga.

Filed Aug. 4, 1980, Ser. No. 174,823
Int. Cl.³ H01H *71/10*
U.S. Cl. 337—168 **13 Claims**

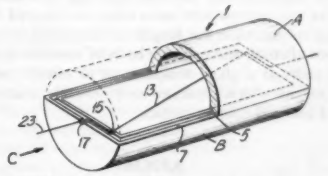
1. An electric cutout comprising a fuseholder, a conducting element mounted on one end of said fuseholder and having a pair of coaxial trunnions on opposite sides thereof, a lower terminal element including a pair of spaced jaws having bight portions arranged to receive said trunnions respectively, a pair of spaced guide surfaces on said jaws, and a pair of spaced complementary guiding surfaces on said conducting element and spaced substantially equidistant from the axis of said trunnions for engagement with said guide surfaces respectively so that said trunnions are maintained in close contact with the bight portions of said jaws during predetermined rotation of said conducting element relative to said terminal element.

4,326,185

ELECTRICAL FUSE WITH SEMI-CYLINDRICAL CASINGS

Hiroo Arikawa, Tokyo, Japan, assignor to San-O Industrial Company, Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,923
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—201 **8 Claims**



1. An electric fuse made of a pair of generally semicylindrical casings coupled to form the fuse cartridge; a body casing and a cover casing for said body casing, said cover casing having a circumferential flat edge surface and a central ridge section protruding above said flat edge surface, spanning substantially the length thereof, said body casing having a circumferential flat edge surface and a central channel recessed therein and extending substantially the length of said flat edge surface of the body casing, said ridge section being adapted to be received by and engaged into said channel so as to form a passageway between said ridge section and said channel and causing said flat edge surfaces to be brought into mating relationship when said body casing and said cover casing are

coupled to form the fuse cartridge; a fusible element stretched diagonally between the ends of said body casing, the ends of said fusible element passing through a pair of diagonally disposed grooves in the edge surface of said body casing at each end thereof and into said passageway between said ridge section and said channel, and out through a pair of grooves, each disposed at the end of said body casing at approximately the middle thereof and wherein the ends of said fusible element are soldered to the respective ends of the body casing.

4,326,186

OFF-CENTERED HOUR GLASS SHAPED COIL SPRING AND THERMAL SWITCH INCORPORATED INTO SAME

Murray G. Clay, Coral Gables, Fla., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Mar. 10, 1980, Ser. No. 128,549

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—407 **7 Claims**

1. An ambient thermal switch comprising: a casing of electrically conductive material; first and second leads in said casing, movable contact-forming means in said casing connected to one of said power leads and making a low resistance contact with another contact surface connected to the other lead; means for separating said movable contact-forming means including a sandwich of elements held under spring pressure between spaced points in said casing and including stressed spring means for applying said spring pressure, said stressed spring means including a compressed hour glass shaped spiral coil spring having relatively wide outer turns on the outside of the spring bearing against adjacent surfaces of said sandwich of elements and gradually inwardly spiraling intermediate turns, the outer and intermediate turns being overlapped and nestled together to minimize the length of the spring in a collapsed condition thereof, and a fusible body of material in said casing which melts at a given temperature to release said stressed spring means which separates said movable contact-forming means from said contact surface.

4,326,187

VOLTAGE NON-LINEAR RESISTOR

Tadahiko Miyoshi; Takeo Yamazaki; Kunihiro Maeda, and Ken Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

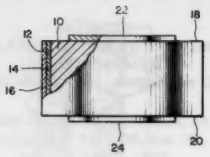
Filed Oct. 8, 1980, Ser. No. 195,257

Claims priority, application Japan, Oct. 8, 1979, 54-128916; Jan. 18, 1980, 55-3562

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—21 **22 Claims**

1. A voltage non-linear resistor comprising a sintered body composed mainly of zinc oxide, said sintered body including confronting main faces and a side face connecting the main faces to each other, electrodes formed on said main faces of the sintered body, respectively, and a coating glass layer of a glass composition covering the side face of said sintered body, said coating glass layer containing barium oxide and being formed by coating a paste containing an organic binder and the glass composition on said sintered body, after said sintered body has



been formed by sintering, and then baking said coated sintered body.

4,326,188

MAGNETICALLY CONTROLLABLE VARIABLE RESISTOR

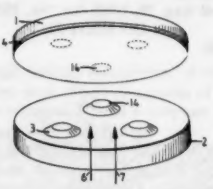
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,827

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926786

Int. Cl.³ H01L *43/08*

U.S. Cl. 338—32 S **10 Claims**



1. A magnetically controllable variable resistor comprising two separate elements composed of a material selected from the group consisting of ferromagnetic and ferrimagnetic materials at least one element having a structure with at least three tapering elevations; a magnetic field sensitive layer of a material of which the specific electrical resistance varies in a magnetic field applied to at least one of said elements; both elements being joined together under mechanical pressure so that pressure contacts are formed at the areas of contact in the region of the tapering elevations by means of said layer; and an electrical field and a magnetic field being present between the two elements.

4,326,189

AIRCRAFT CONTROL/GUIDANCE DISPLAY AND MECHANISM FOR ENROUTE AND LANDING UTILITY

Carl J. Crane, Box 17745, San Antonio, Tex. 78217

Filed Apr. 23, 1979, Ser. No. 32,419

Int. Cl.³ G01C *21/00, 23/00*

U.S. Cl. 340—27 NA **4 Claims**

1. In an aircraft control and guidance system, an avionics display structure including a base having a plurality of synchro receivers mounted thereon,

one synchro receiver including a rotatable shaft having a transverse axis of rotation, arm means affixed to each end of said rotatable shaft, said arm means having inwardly bent horizontal portions providing a substantially continuous horizon bar for up and down movement parallel to said base for indicating pitch with reference to a horizontally disposed lubbers line,

a tandem pair of synchro receivers, each having a shaft, the

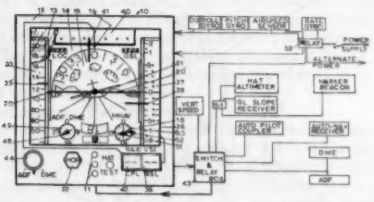
shaft of one said tandem pair of synchro receivers passing through the shaft of the other along a common longitudinal axis, an aircraft symbol pointer mounted on the shaft of one said tandem pair of synchro receivers for portraying aircraft roll to the right by clockwise rotation thereof and aircraft roll to the left on counterclockwise rotation thereof, the shaft of the other of said tandem pair of synchro receivers having affixed thereto a circular dial for clockwise rotation in response to left aircraft turns and counterclockwise rotation in response to right aircraft turns, said circular dial having delineated thereon a compass rose for indication of aircraft heading and an associated lubbers line;

an upstanding fixed partial dial interposed between said circular dial and said horizon bar for partially obscuring the substantive lower portion of said circular dial;

a first microammeter, scale and pointer and comprising a course direction indicator; and

a second microammeter, vertical scale, and vertically moving pointer and comprising means for selective indication of glide slope, vertical speed and height above touchdown;

a first vertical gyro having synchro output for driving said one synchro receiver;



a second vertical gyro having synchro output for driving said one of said tandem pair of synchro receivers having said aircraft symbol pointer mounted on the shaft thereof;

a directional gyro having synchro output for driving said one of said tandem synchro receivers having said circular dial mounted on the shaft thereof;

a VOR/LAC navigation receiver having output for operating said course direction indicator;

a glide slope receiver having output for operation of second microammeter in indicating glide slope;

a vertical speed sensor having output for operation of said second microammeter in indicating vertical speed;

a height-above-touchdown landing altimeter having output for operation of said second microammeter in indicating height above touchdown;

switch means for selective operation of said second microammeter by said glide slope receiver and vertical speed sensor;

said avionics display structure being contained with a case for viewing thereof; and

said case having electric connector plug means for operative transmission of output to said avionics display structure.

4,326,190
BOUNDARY TRACE SLOPE FEATURE DETECTION SYSTEM

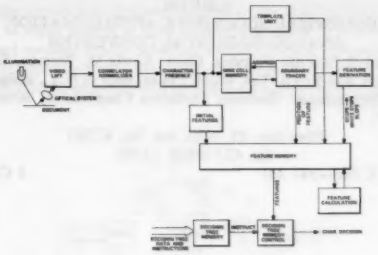
David L. Borland, 400 Britain Ct., Irving, Tex. 75062, and Lyle W. Shaw, 127 Skyline Dr., Plano, Tex. 75074

Filed Aug. 30, 1978, Ser. No. 938,271
Int. Cl.³ G06K *9/48*
U.S. Cl. 340—146.3 AE **5 Claims**

1. An improved method of recognizing descriptive features of characters, which have been scanned with a plurality of sensor cells, from binary representation thereof stored in a memory means, and tracing around the stored character representations, comprising the steps of

(a) deriving initial features of a character such as circumference count prior to tracing around the character;

(b) generating a single boundary trace on the boundary of the character to locate character features;



(c) defining the contours of the character without regard to size of the character based upon the character shape and features derived during the boundary trace;

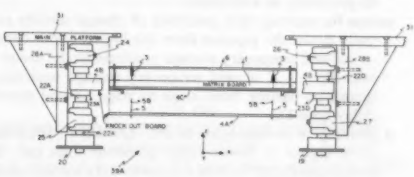
(d) Weighting the derived features; and

(e) generating a character code based upon the weighted features of the character.

4,326,191
AUTOMATIC SWITCHING MATRIX

Martin F. Schlecht, Cambridge; John G. Kassakian, Newton; Anthony J. Caloggero, Lynn; Bruce Rhodes, Dorchester; David Otten, Newton, and Neil Rasmussen, Sudbury, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 1, 1980, Ser. No. 117,706
Int. Cl.³ H04Q *1/02*
U.S. Cl. 340—825.79 **2 Claims**



1. An automatic switching matrix that comprises, in combination

(a) an apertured matrix board comprising a matrix of intersecting conductors that can be interconnected at any intersection thereof, the matrix board having apertures that extend from one major surface to the other major surface thereof, each aperture mating with an intersection of intersecting conductors;

(b) a plurality of conductive connection pins, one such pin being disposed to register with each aperture and initially out of contact with the conductors located in the associated aperture;

(c) means for automatically depressing individual connection pins into selected apertures, which automatic depressing means comprises:

(i) an x-y positioning mechanism and

(ii) an electro-mechanical pin depressing mechanism which is positioned, automatically, by the x-y positioning mechanism; and

(d) an automatic reset mechanism that forces the connection pins from apertures in which they are inserted, which the automatic reset mechanism comprises a knock-out board containing a plurality of reset pins, each such reset pin being located to register with an aperture in the matrix board, and means to move the knockout board toward the matrix board so that the reset pins will enter the matrix

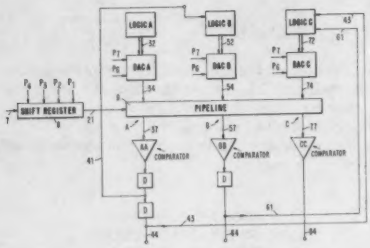
board and push the conductive connection pins out of the electrical connection with the conductors in the corresponding hole.

4,326,192

SEQUENTIAL SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTER

Richard B. Merrill, Hamden, Conn.; Lewis M. Terman, South Salem, and Yen S. Yee, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,557
Int. Cl.³ H03K *13/08*
U.S. Cl. 340—347 AD **1 Claim**



1. An analog-to-digital signal conversion system comprising:

an input for analog signal quantities of electrical charge,

an analog signal pipeline circuit having a plurality of analog data temporary storage positions A,B . . . X where X represents the number of said storage positions arranged serially from higher to lower order positions with respect to proximity to said input,

means for moving said quantities of charge serially sequentially down the pipeline from the higher order ones, A,B . . . of said temporary storage positions to the lower order ones B, . . . X of said temporary storage positions, said quantities passing from stage to stage of said pipeline in delay time D,

a plurality of comparison circuits AA, BB . . . XX ranging from higher to lower order positions with one thereof being coupled to each of said temporary storage positions,

at least one reference signal source adapted for producing reference signals A,B . . . X with one associated with each of said storage positions A,B . . . X,

means for coupling said reference signals A′,B . . . X′ from said reference signals source to said comparison circuits A to AA, B to BB . . . and X to XX,

said reference signal source including logic DAC means for generating said reference signals A′,B′ . . . X′ from said reference signal source,

said logic DAC means having a plurality of sets of input units B″ . . . X″ with each thereof being connected to each of the outputs of the higher order ones of said comparison circuits through delay circuits providing delay times D multipled as a function of the number of positions separating lower order ones of said sets of inputs B″ . . . X″ from higher order ones of said storage positions A,B, . . . X−1 so that a reference signal supplied to each analog data temporary storage position depends upon the outputs obtained from the higher order comparison circuits for a particular analog signal quantity passing through said pipeline circuit,

clock means for timing coupling by said means for coupling from a said reference signal source to a said comparison circuit in phased relationship with provision of corresponding analog signal quantity from said pipeline to said comparison circuit with delay time D between, and

output lines connected to provide the digital outputs of said conversion system being connected to the outputs of said comparators AA,BB . . . XX through said delay circuits,

said analog signal quantities comprise charge packets and said comparision connections couple said charge packets to said comparison means, and said control and quantification means provides reference charge packets to said comparison circuits,

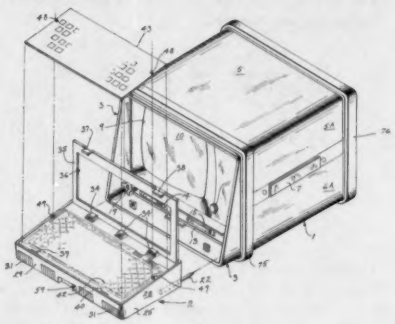
and said reference charge packets are coupled to said comparison circuits through said storage positions.

4,326,193

TERMINAL WITH INTERCHANGEABLE APPLICATION MODULE

Theodore J. Markley, Mentor; Daniel J. Galdun, Huntsburg; Charles E. Clark, Eastlake; Robert G. Henderson, Wickliffe, and Frank W. Jencen, Cleveland, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 12, 1979, Ser. No. 75,175
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R **9 Claims**



1. In a terminal for receiving data through a manual data input means and for displaying data through a data display means, the combination comprising:

a main unit for housing circuitry and including a bezel that provides a first opening through which the data display means is directed and a second opening located beneath the first opening which provides access to the circuitry within the main unit;

connector means mounted within the main unit, connected to said circuitry and oriented to face out through said second opening;

guideway means formed on the main unit and oriented to face out through said second opening;

an application module for mounting said data input means and including

(a) a housing,

(b) guide means supported by said housing for mating with said guideway means to align said housing over said second opening in the main unit, and

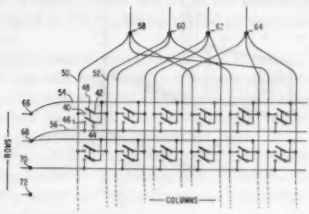
(c) connection means mounted within said housing and being electrically coupled to said data input means, said connection means being oriented to engage and make electrical connection with said connector means in the main unit when the guide means is completely engaged with said guideway means; and

in which said guideway means defines two cylindrical cavities, each having a longitudinal axis which is parallel to the other, and the guide means on said application module includes two guideposts which are spaced apart and parallel to one another such that they are received within said cylindrical cavities.

4,326,194
DUAL ENCODED SWITCHING MATRIX

Russell J. Pepe, Piscataway, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 30,502, Apr. 16, 1979, abandoned. This application Oct. 10, 1979, Ser. No. 195,959
Int. Cl.³ G06F 3/02
U.S. Cl. 340—365 R **3 Claims**



1. An input switch arrangement comprising:

a plurality of switch members arranged in a rectangular array of columns and rows, each of said switch members being positioned at the intersection of a respective column and row of said array, each of said switch members having a first side, a second side, a third side and a fourth side adapted to be selectively connected together;

a first plurality of terminals;

a second plurality of terminals;

means for connecting the first side of all the switch members within a one of the columns to one of said first plurality of terminals and the second side of all of the switch members within said one of the columns to a different one of said first plurality of terminals so that the switch members within each column are connected to a unique pair of said first plurality of terminals and wherein the number C of columns and the number M of said first plurality of terminals satisfy the relationship

$$\frac{(M-1)(M-2)}{2} < C \leq \frac{M(M-1)}{2};$$

and

means for connecting the third side of all of the switch members within a one of the rows to one of said second plurality of terminals and the fourth side of all of the switch members within said one of the rows to a different one of said second plurality of terminals so that the switch members within each row are connected to a unique pair of said second plurality of terminals and wherein the number R of rows and the number N of said second plurality of terminals satisfy the relationship

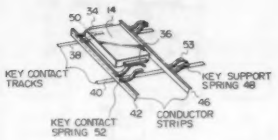
$$\frac{(N-1)(N-2)}{2} < R \leq \frac{N(N-1)}{2}$$

4,326,195
MULTI-ITEM DATA INPUT APPARATUS

Yashiro Seki, and Hideo Kobayashi, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited and Systematix Co. Ltd., both of Osaka, Japan

Filed Apr. 16, 1980, Ser. No. 140,681
Claims priority, application Japan, Jun. 21, 1979, 54-78296
Int. Cl.³ G08C 1/00; H01H 9/00; G08C 9/00
U.S. Cl. 340—365 R **12 Claims**

1. A multi-item data input apparatus for manual generation of data to designate selected ones of a plurality of data items displayed upon a flat sheet, comprising a matrix plate having a plurality of apertures provided therein, each of said apertures corresponding in position to one of said items, a plurality of keys each being transparent in at least a portion thereof and movably supported within a corresponding one of said apertures, a plurality of row conductors consisting of conducting strips fixedly retained within said matrix plate, a plurality of column conductors disposed parallel to one another below said keys at right angles to said conducting strips, a plurality of contact springs fixedly attached and electrically connected to said conducting strips, with each of said contact springs being disposed with respect to one of said keys such as to contact one

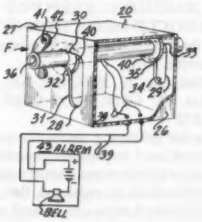


of said column conductors when said one of the keys is depressed, and a plurality of support springs fixedly attached to said conducting strips, with each of said support springs bearing against a lower face of a corresponding one of said keys and urging said key in a direction outward from said matrix plate, and wherein each of said contact springs bears against a lower face of one of said keys for urging said key in said outward direction, with each of said keys being limited with respect to movement in said outward direction by a portion thereof bearing against a lower face of said matrix plate.

4,326,196
UNIVERSAL GRAVITY OPERATED INTRUSION SENSING DEVICE

Arthur L. Plevy, 9 Yorktown Rd., East Brunswick, N.J. 08816

Filed May 8, 1980, Ser. No. 147,722
Int. Cl.³ G08B 13/08
U.S. Cl. 340—545 **10 Claims**

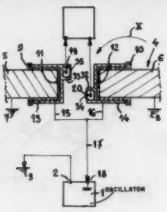


1. A gravity operated intrusion sensing device comprising a mercury tilt switch having at least two modes of operation and a housing means to movably support said switch in a first position to produce a first operating mode and to enable said switch to move in accordance with an applied force from said first position and fall freely under the influence of gravity as constrained by said housing to a second position manifesting a reference plane indicative of tilting said switch to produce a second mode of operation.

4,326,197
PROXIMITY DETECTOR

Jean Evin, Pont a Marcq, France, assignor to Societe Logilift S.A.R.L., Lille, France

Filed Mar. 25, 1980, Ser. No. 133,670
Claims priority, application France, Mar. 28, 1979, 79 08410
Int. Cl.³ G08B 13/24, 13/22
U.S. Cl. 340—561 4 Claims



1. Proximity detector for revealing the presence of a body at a certain distance from an element (5, 6) detecting the body comprising

an oscillator (1) whose emission point (2) is connected to the ground (3) so as to transmit to the latter a signal of constant amplitude and frequency;

at least one monitoring antenna (19, 20) divided into several independent sections, mounted on the part (11, 12) of said element (5, 6) whose approaches are being monitored, but located outside of the direct radiation field of the elements coupled to ground which normally surround this part and act indirectly on said antenna sections;

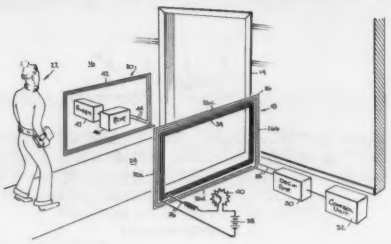
a processing circuit for the voltages induced across each monitoring antenna section by the waves simultaneously reflected and radiated by the bodies normally surrounding the antenna as well as by any foreign body, said processing circuit functioning to emit a final signal whose intensity is modified by the existence of a foreign body in the proximity of said antenna, the antenna sections being connected to means (30, 31 and 36 to 39) in said processing circuit for sampling two distinct signals relating, one, to the "peak" value of the voltage induced across the section whose voltage is the highest and, the other, to the mean value of the voltage across the various sections, which sampling means is in turn connected to means (21, 22) of analyzing these two signals.

4,326,198
METHOD AND APPARATUS FOR THE PROMOTION OF SELECTED HARMONIC RESPONSE SIGNALS IN AN ARTICLE DETECTION SYSTEM

Eugene B. Novikoff, Woodbury, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,568
Int. Cl.³ G01R 29/08; G08B 21/00
U.S. Cl. 340—572 27 Claims

1. Apparatus for detecting the presence of an article in an interrogation zone, said apparatus comprising a target formed of a strip of a saturable ferromagnetic material and adapted to be carried on said article, an enlarged, flat, planar interrogation antenna coil positioned adjacent to and extending along said interrogation zone, so that targets carried through said zone must pass through magnetic interrogation fields produced by said coil, electrical oscillator and drive means constructed and arranged to produce an interrogation signal at a first frequency, said interrogation antenna coil being electrically coupled to said electrical oscillator and drive means to produce a varying magnetic interrogation field at said first frequency throughout said interrogation zone, said varying magnetic field having a characteristic magnetic field pattern, magnetic bias means constructed and arranged to produce, throughout said interrogation zone a magnetic biasing field having a characteristic magnetic field pattern essentially the same as the characteristic magnetic field pattern of said varying magnetic interrogation field said magnetic bias means including a bias coil of substantially the same configuration as said interrogation antenna coil and positioned adjacent said interrogation antenna coil and means for supplying electrical current to said bias coil, said drive means, said interrogation antenna coil, and said

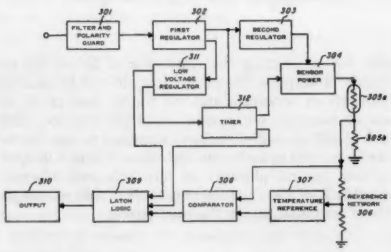


magnetic bias means further being arranged such that the net magnetic fields produced thereby are capable, at each location throughout said interrogation zone, of causing said target to produce target signals in the form of magnetic fields which vary at frequencies harmonically related to said first frequency and receiver means constructed and arranged to detect the presence, in said interrogation zone of said target signals.

4,326,199
AUTOREFERENCING LIQUID LEVEL SENSING APPARATUS AND METHOD

Roy W. Tarpley, Garland; Larry A. Rehn, Rowlett, and Paul H. Davis, Seagoville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 11, 1980, Ser. No. 176,836
Int. Cl.³ G08B 21/00
U.S. Cl. 340—622 6 Claims



1. An autoreferencing liquid level sensing apparatus comprising:

a temperature sensitive resistance element including a silicon bulk resistor element having an impurity concentration level for causing said silicon bulk resistor element to exhibit a positive temperature coefficient of resistance within a predetermined temperature range and first and second electrodes in ohmic contact with said silicon bulk resistor, said temperature sensitive resistance element being disposed at a position whereat the presence of a liquid is to be determined;

a timing means for generating an enabling signal for a predetermined period of time;

an electric power source connected to said temperature sensitive resistance element and said timing means for applying a predetermined amount of electric power to

said temperature sensitive resistance element via said first and second electrodes when said enabling signal is generated;

a resistance measuring means connected to said temperature sensitive resistance element for generating a temperature dependent signal corresponding to the electrical resistance of said temperature sensitive resistance element;

a temperature reference means connected to said timing means and said reference measuring means for generating a temperature reference signal having an initial value and a rate of change, each related to the temperature dependent signal at the beginning of said predetermined period of time;

a comparison means connected to said resistance measuring means and said temperature reference means for generating a comparison output signal whenever said temperature dependent signal and said temperature reference signal have a predetermined relationship; and

a latch means connected to said timing means and said comparison means for generating a latch output signal if said enabling signal and said comparison output signal are ever generated simultaneously.

4,326,200

GAS DETECTING AND MEASURING APPARATUS

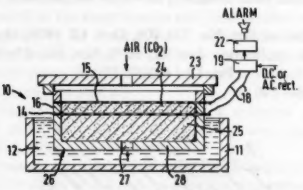
John A. Bushman, London, England, assignor to Neotronics Limited, Bishops Stortford, England

Filed May 13, 1980, Ser. No. 149,525

Claims priority, application United Kingdom, May 18, 1979, 17380/79

Int. Cl.³ G08B *17/10*; G01N *27/46*

U.S. Cl. 340—632 **12 Claims**



1. Gas detecting apparatus containing no moving parts and comprising a reservoir for a liquid ionizable by dissolution therein of the gas to be detected, at least two spaced apart electrodes disposed at least adjacent the reservoir for electrical connection to an external circuit for measuring the variation in electrical resistance of said liquid between the electrodes, a wettable de-ionizing medium accessible to said gas from the ambient atmosphere and disposed in such proximity to at least one of the electrodes and to the reservoir that the said medium is wetted in use by said liquid and is effective to de-ionize said liquid between the electrodes.

4,326,201

APPARATUS FOR DISPLAYING CHARACTERS

Takatoshi Enokizono, Fussa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 25, 1980, Ser. No. 143,799

Claims priority, application Japan, Apr. 27, 1979, 54-51440

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—717 **7 Claims**

1. An apparatus for displaying characters which divides a display screen of the raster scan type and provides display information to the respective divided sides by using a mirror reflection, comprising:

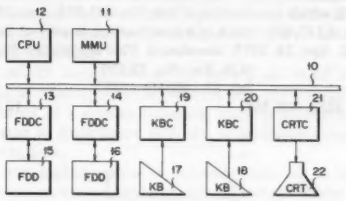
a programmable CRT controller;

a display unit for displaying dot data in a raster scan manner;

a refresh memory for storing coded data to be displayed in response to a refresh memory address obtained from the programmable CRT controller;

raster address converting circuit means which receives a raster address from the controller and converts the raster address to a converted raster address;

multiplexer means for selectively outputting the raster address from the controller and the converted raster address from the refresh memory address converting circuit means on the basis of control information contained in the refresh memory address;



a character generator for converting the coded data from the refresh memory into pattern data on the basis of raster address information from the multiplexer means; and

bidirectional shift register means which receives the pattern data from the character generator, determines a shift direction thereof on the basis of control information contained in the refresh memory address and produces serial dot data which is coupled to the display unit.

4,326,202

IMAGE MEMORY DEVICE

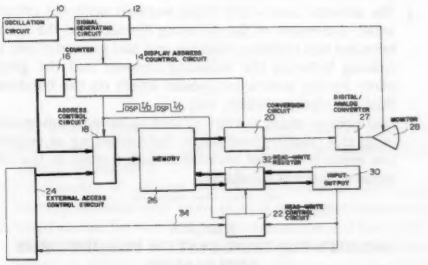
Masatsugu Kidode; Haruo Asada, and Mitsuo Tabata, all of Kawasaki, Japan, assignors to The President of the Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,574

Claims priority, application Japan, Mar. 26, 1979, 54-34256

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—799 **1 Claim**



1. In an image memory device comprising an image memory unit for storing two-dimensional data, a display device for raster display of the data stored in the image memory unit and an input-output device for reading and/or writing the data out of and/or into said image memory unit; the improvement in which the image memory unit is provided with an address control circuit which generates a display address switching signal based on a synchronous signal for operating said display device, an address switching control circuit is further provided in front of the image memory unit, which selects periodically a raster display address data and an address data from said input-output device based on said display address switching signal, and means whereby the data access takes place during the period of reading out the display data of said display address switching signal and then the accessed data is displayed

on the display device throughout the periods of transmitting the data between the image memory unit and the input-output device and of reading out the succeeding display data.

4,326,203

CORNER FED ELECTRIC NON RECTANGULAR MICROSTRIP DIPOLE ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 919,195, Jun. 26, 1978, Pat. No. 4,170,012, which is a division of Ser. No. 871,573, Jan. 23, 1978, Pat. No. 4,117,489, which is a continuation-in-part of Ser. No. 571,152, Apr. 24, 1975, abandoned. This application Sep. 26, 1979, Ser. No. 79,010

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **10 Claims**

1. A corner fed electric microstrip dipole antenna having low physical profile and conformal arraying capability, comprising:

a. a thin ground plane conductor;

b. a thin non-rectangular four-sided radiating element spaced from said ground plane;

c. said radiating element having two opposite sides parallel to one another and at least one of the remaining two sides at an oblique angle to the first mentioned two opposite parallel sides;

d. said radiating element being electrically separated from said ground plane by a dielectric substrate;

e. said radiating element having a feed point located at a single corner thereof;

f. the effective length of said radiating element determining the resonant frequency along the length of said antenna and the effective width determining the frequency along the width of said antenna;

g. the antenna bandwidth being variable with the effective width dimension of the radiating element and the spacing between said radiating element and said ground plane, said spacing between the radiating element and the ground plane having somewhat greater effect on the bandwidth than the element width; and

h. said oblique angle portion of said radiating element operating as a reactive load means for advancing or retarding one mode of current oscillation with respect to the other mode of current oscillation.

4,326,204

DENSITY CONTROL SYSTEM FOR JET DROP APPLICATOR

Tim Erin, Beavercreek, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 25, 1980, Ser. No. 180,555

Int. Cl.³ G01D *15/18*

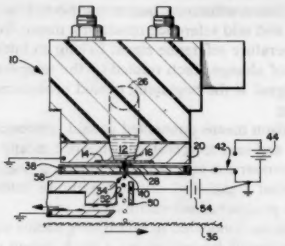
U.S. Cl. 346—75 **5 Claims**

5. A drop control system for jet drop coating apparatus, the said apparatus having a cyclic stimulation signal, a drop charging electrode, a coating region, means for moving a substrate material to be coated through the coating region, and means cooperating with the drop charging electrode providing for coating the substrate or inhibiting coating of the substrate, the said control system comprising:

means cooperating with the said moving substrate providing a signal responsive to the movement of said substrate material over a predetermined distance;

means cooperating with the said cyclic stimulation signal for providing a signal responsive to a manually selected predetermined number of cycles of the said cyclic stimulation signal; and

means responsive to the said signal responsive to the substrate movement and the said signal responsive to the selected number of cycles, cooperating with the said drop



charging electrode, whereby the said coating apparatus coats the said substrate during the said selected number of cycles over a portion of the substrate movement of the predetermined distance and inhibits the coating of the substrate during the remainder of the predetermined distance.

4,326,205

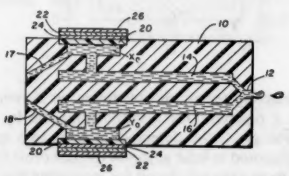
COINCIDENCE FLUID DISPLACEMENT AND VELOCITY EXPRESSION OF DROPLET

Kenneth H. Fischbeck, Dallas, and Marcus M. Schnarr, Lewisville, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 731,406, Oct. 12, 1976, abandoned. This application Jun. 11, 1979, Ser. No. 47,618

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **11 Claims**



1. In a multiple ink jet assembly comprising: at least two ink jets, each having a pressure channel with an outlet orifice at one end thereof; a first fluid chamber; first passage means communicating said first fluid chamber with the channel of one of said jets at a remote distance from the orifice thereof; a second fluid chamber; second passage means communicating said second fluid chamber with the channels of each of said jets at a remote distance from the orifice thereof; each said channel defining a predetermined fixed fluid path between the communication of said passage means therewith and its respective orifice; liquid in said first and second fluid chambers and each of said passage means and channels; means for independently decreasing the volume of each of said first and second fluid chambers and generating pressure pulses therefrom of an amplitude and duration that a pressure pulse generated by one chamber will result in inadequate fluid displacement and inadequate fluid velocity to express a droplet from any of said orifices, but the combined fluid displacement and fluid velocity, which is the result of the pressure pulse generated by said first chamber and the pressure pulse generated by said second chamber being coincident at the orifice of said one jet, will

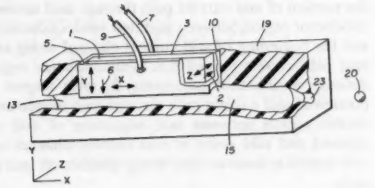
effect expression of a liquid droplet therefrom; and means for effecting coincidently at the orifice of said one jet the pressure pulse generated by said first chamber and the pressure pulse generated by said second chamber.

4,326,206

METHOD OF REDUCING CROSS TALK IN INK JET ARRAYS

Curt R. Raschke, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1980, Ser. No. 164,479
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**



1. A method of operating an array of pulsed droplet ejectors which comprises:

(a) determining the velocity of ink droplets ejected from a first selected ejector in the ejector array when said first ejector is operated alone at a first preset drive pulse width;

(b) determining the velocity of ink droplets ejected from said first selected ejector when at least one adjacent ejector is operated at the same time as said first ejector, said ejectors being driven by a drive pulse of the same width as said first preset drive pulse width;

(c) determining the difference in droplet velocities obtained from steps (a) and (b);

(d) selecting a drive pulse having a different pulse width than previously used in steps (a)–(c) and repeating steps (a)–(c) using said different pulse width;

(e) repeating steps (a)–(d) a sufficient number of times until a drive pulse width can be selected that provides acceptable image quality both when said first ejector is operated alone and when said first ejector is operated at the same time as adjacent ejectors; and

(f) operating an ejector array using a drive pulse having the drive pulse width selected in step (e).

4,326,207

PROGRAMMABLE SEQUENCE CONTROLLER

Hiroharu Suda, Yokohama; Keiji Hideshima, Fujisawa; Kazuyoshi Asada, Hitachi; Masaoki Takaki, Hitachi; Isao Yasuda, Hitachi, and Atsutaro Kamei, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 906,986, May 17, 1978, abandoned.
This application Apr. 14, 1980, Ser. No. 139,760
Claims priority, application Japan, Nov. 18, 1977, 52-137920
Int. Cl.³ G05B *19/12*; G06F *9/06*
U.S. Cl. 364—900 **7 Claims**

1. In a programmable sequence controller which is responsive to the states of a plurality of contacts for controlling one or more output elements, said sequence controller being programmable so as to simulate a circuit formed as a matrix consisting of contacts interconnected in rows, and columns forming branch points between rows of contacts, with said output elements being connected in selected rows of contacts, said matrix including a first voltage node at one marginal column, contacts or output elements between successive ones of said columns, and a second voltage node at the other marginal column, with branch points at selected crosspoints of the rows and the columns at which a signal passing from the first voltage node along the rows is branched along the corresponding column, said programmable sequence controller comprising:

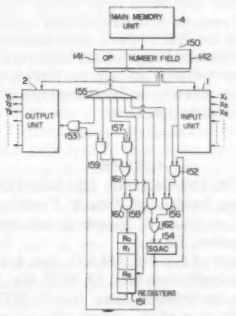
input selection means for selectively providing on-off state signals indicating the operational state of selected contacts;

sequence program storage means for storing programmed sequence instructions which simulate said circuit formed as a matrix;

logical processing means connected to said input selection means and said sequence program storage means for generating an output control signal on the basis of said programmed sequence instructions and said on-off state signals, including

(1) second storage means for storing an on-off condition signal relating to the on-off condition of a crosspoint at the output of a contact including initially setting the stored value in accordance with the programmed sequence instructions,

(2) first logical operation means connected to said input selection means and said second storage means for producing said on-off condition signals by a first logical operation between the content of said second storage means and an on-off state signal from said input selection means and for storing the result of said first logical operation in



said second storage means as the new content thereof in accordance with the execution of said programmed sequence instructions,

(3) a plurality of column flip-flops provided in one-to-one correspondence with each of said simulated matrix columns except for said marginal columns thereof for temporarily storing said on-off condition signals for those crosspoints at which there is a branch point in said simulated sequence circuit, and

(4) second logical operation means connected to said second storage means and said column flip-flops for producing said on-off condition signals by a second logical operation between the content of said second storage means and the on-off condition signal stored in a column flip-flop and for storing the result of said second logical operation in either said second storage means or said column flip-flops or both as new contents thereof in accordance with the execution of said programmed sequence instructions, and

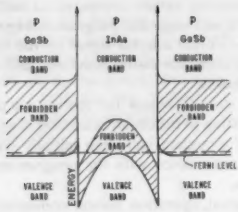
(5) means for providing the result of the logical operation by said first or second logical operation means as said output control signal; and

output control means connected to said logical processing means for controlling a selected output element on the basis of said output control signal.

4,326,208
SEMICONDUCTOR INVERSION LAYER TRANSISTOR

Frank F. Fang, Yorktown Heights, and George A. Sai-Halasz, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,235
Int. Cl.³ H01L *29/161*
U.S. Cl. 357—16 7 Claims

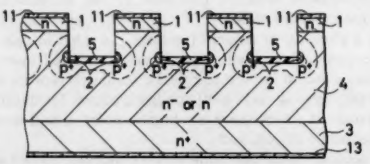


1. A semiconductor transistor which is comprised of a semiconductor base which is disposed between and which forms respective junctions with a semiconductor emitter and a semiconductor collector, all of said base, emitter and collector being doped with one of donors or acceptors and said junctions having charge barriers associated therewith, at least the base-emitter charge barrier being assymmetrically conducting with respect to electrons and holes respectively, and said emitter and base being of respective semiconductor materials such that the Fermi level in the base is above the conduction band edge or below the valence band edge of said semiconductor material at the base-emitter junction but is in the forbidden band in the interior of the base, whereby an inversion layer is formed in the base at said base-emitter junction.

4,326,209
STATIC INDUCTION TRANSISTOR

Jun-ichi Nishizawa, Sendai, and Takashi Yoshida, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 893,537, Apr. 4, 1978, Pat. No. 4,199,771. This application Oct. 19, 1979, Ser. No. 86,670
Claims priority, application Japan, Nov. 7, 1977, 52-41550
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 19 Claims

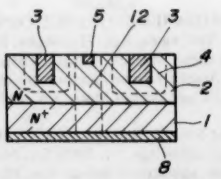


1. In a semiconductor device of the type comprising:
a first semiconductor region of a first conductivity type and having a first predetermined doping characteristic and first predetermined dimensions;
a second semiconductor region of a conductivity type not opposite to said first conductivity type and having a second predetermined doping characteristic and second predetermined dimensions;
a third conductive region of third predetermined dimensions;
said first and second semiconductor regions and said third conductive region being relatively disposed such that said first semiconductor region is adjacent said second semiconductor region and said second semiconductor region is adjacent said third conductive region to provide a current path through said first, second and third regions; and
gate means, responsive to a bias signal applied thereto, for producing, even at zero value of said bias signal, a depletion layer extending into said second semiconductor region to define a current channel in said second semiconductor region and at least nearly pinch off said current path at a point in said current channel,
said first predetermined doping characteristic and said first predetermined dimensions defining a resistance parameter R_{sr} with respect to the portion of said current path through said first region,
said second predetermined doping characteristic and second predetermined dimensions in conjunction with said gate means defining a resistance parameter R_{sc} with respect to the portion of said current path through said second semiconductor region between said first semiconductor region and the beginning of said current channel along said current path closest to said first semiconductor region and defining a resistance parameter R_c with respect to the portion of said current path through said second semiconductor region between said beginning of said current channel and said point in said current channel whereat said depletion layer at least nearly pinches off said current path,
said device exhibiting an apparent transconductance G_m' related to the true transconductance of said device as $G_m'=G_m/\{1+(R_{sr}+R_{sc}+R_c)G_m\}$,
the improvement wherein:
said first and second doping characteristics, said first and second dimensions are of values such that, over a substantial portion of the operational range of said device:
the product $R_c \cdot G_m$ is less than unity; and
the product $(R_{sr}+R_{sc}+R_c)\cdot G_m$ in greater than or equal to unity;
whereby said device exhibits a nearly linear current-voltage response.

4,326,210
LIGHT-RESPONSIVE FIELD EFFECT MODE SEMICONDUCTOR DEVICES

Akira Aso, Nara, and Hitoshi Kawanabe, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 945,918, Sep. 26, 1978, abandoned. This application May 12, 1980, Ser. No. 149,258
Claims priority, application Japan, Sep. 26, 1977, 52-116209
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 6 Claims



1. A radiant energy responsive field effect mode semiconductor device comprising:
a semiconductor substrate;
a source region disposed in said substrate;
a drain region disposed on said substrate;
at least a pair of gate regions formed on said substrate between said source region and said drain region each of said pair of gate regions producing a juxtaposed depletion region between said pair of gate regions in said substrate in the absence of excitation, said depletion region pinching off the current between said drain regions;

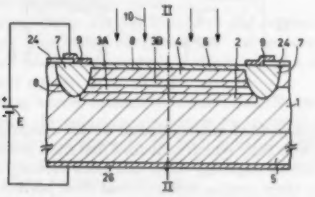
said depletion regions contracting in response to application of radiant energy to said substrate to allow current to flow from said source region to drain region.

4,326,211

N+PP−PP−P+ AVALANCHE PHOTODIODE

Eugenius T. J. M. Smeets, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 935,026, Aug. 18, 1978, abandoned.
This application Aug. 20, 1980, Ser. No. 179,865
Claims priority, application Netherlands, Sep. 1, 1977, 7709618
Int. Cl.³ H01L 21/265, 31/10
U.S. Cl. 357—30 11 Claims



1. A radiation-sensitive semiconductor device having a radiation-detecting avalanche diode comprising a semiconductor layer structure having a plurality of layers of a first type conductivity located between two contact layers and a window through which incident radiation can pass to be incident on said layer structure, said layer structure comprising successively at least:

a first, lightly-doped semiconductor layer of substantially homogeneous doping;

a second semiconductor layer having a doping concentration which is higher than that of the first layer;

a third semiconductor layer having a lower doping concentration than that of said second layer; and

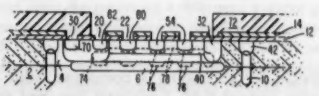
a fourth semiconductor layer having a higher doping concentration than that of the third layer, said fourth layer serving to improve the noise factor of said radiation-detecting avalanche diode, a first contact layer being located on the lowermost side of said layer structure and forming a nonrectifying junction with said first semiconductor layer, and a second contact layer being located on the uppermost side of said layer structure and forming a rectifying junction with the uppermost semiconductor layer of said layer structure, said fourth semiconductor layer being located between said third semiconductor layer and said second contact layer.

4,326,212

STRUCTURE AND PROCESS FOR OPTIMIZING THE CHARACTERISTICS OF I²L DEVICES

David L. Bergeron, Manassas; Zimri C. Putney, Fairfax, and Geoffrey B. Stephens, Catlett, all of Va., assignors to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 855,869, Nov. 30, 1977, abandoned.
This application Aug. 27, 1979, Ser. No. 69,645
Int. Cl.³ H01L 27/04; H03K 19/081
U.S. Cl. 357—46 2 Claims



1. In an integrated injection logic circuit cell containing a lateral PNP transistor and a vertical NPN transistor, embodied as a buried N-type subemitter region formed between a semiconductor substrate and an N-type silicon epitaxial layer, said subemitter region extending horizontally with a first end and a second end and having an upper surface at a first depth from the upper surface of said epitaxial layer, an N-type base region formed in said epitaxial layer over said first end of said subemitter and extending vertically from said upper surface of said epitaxial layer to contact said subemitter said N-type base being contiguous to a P-type emitter, a P-type base region formed in said upper surface of said epitaxial layer over said subemitter, having a first end overlapping said N-type base region, a second end extending horizontally toward said second end of said subemitter, and a lower surface at a second depth from said upper surface of said epitaxial layer, said second depth being less than said first depth, said P-type base region serving as the base of said NPN transistor and the collector of said PNP transistor, an insulating layer on the upper surface of said epitaxial layer having a horizontal contour with first and second windows therethrough mutually spaced from each other and located over said P-type base region between said N-type base region and said second end of said P-type base region, said first window serving as an electrical contact for said P-type base region, an N-type collector region formed in said P-type base region beneath and aligned with said second window and having a lower surface at a third depth from said upper surface of said epitaxial layer, said third depth being less than said second depth, the portion of said P-type base region beneath and aligned with said N-type collector region defining an intrinsic base region and other portions of said P-type base region being an extrinsic base region; the improvement comprising:

an ion-implanted P-type region extending horizontally from said N-type base region toward said second end of said P-type base region, with the vertical profile of its dopant concentration contour having a peak which is vertically displaced from said contour of said insulating layer, said peak being located substantially at said first depth beneath and aligned with said N-type collector region to form a concentration gradient induced electric field in said intrinsic base region which aids the upward injection of electrons from said subemitter to said N-type collector, said peak being located substantially midway between said first depth and said second depth beneath portions of said P-type base region covered by said insulating layer to form a concentration gradient induced electric field in said extrinsic base region which retards the upward injection of electrons from said subemitter to said P-type base region, said dopant concentration contour compensating said N-type conductivity of said epitaxial layer beneath said P-type base region beneath said first window and said N-type base region to form a relatively large collector area for said PNP transistor to provide increased PNP collector efficiency and current gain.

4,326,213

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Kazunari Shirai, and Izumi Tanaka, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 29, 1978, Ser. No. 964,514
Int. Cl.³ H01L 27/02
U.S. Cl. 357—51 7 Claims

1. An integrated semiconductor circuit device comprising:

a semiconductor substrate having impurity regions for at least one active element including a respective insulated gate on said substrate;

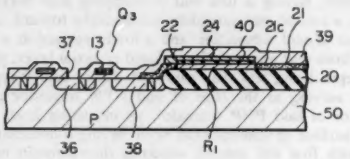
a field insulating film selectively covering the surface of said semiconductor substrate to at least partly define each said active element;

a first polycrystalline semiconductor material layer selectively covering said field insulating film and having a shape and impurity level in respective portions to form at least one resistor element extending in a respective prede-

termined direction with a conductor portion at each end of each said resistor element;

a further insulating film covering each said resistor element; and

a second polycrystalline semiconductor material layer having a respective portion completely covering said second insulating film over each said resistor element and in electrical contact with the conductor portion at a first end of each resistor element, each said portion of the second



polycrystalline material layer that covers over a respective resistor element providing a conductor pattern from said first end of each said resistor element selectively to said at least one active element of said device, and each said portion of said second polycrystalline layer covering a respective resistor element terminating at the other end of the respective resistor element, and said second polycrystalline material layer further comprising the gate electrode of said respective gate of each said active element.

4,326,214

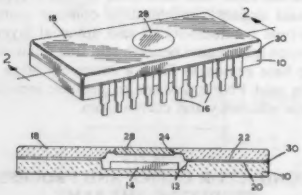
THERMAL SHOCK RESISTANT PACKAGE HAVING AN ULTRAVIOLET LIGHT TRANSMITTING WINDOW FOR A SEMICONDUCTOR CHIP

Richard K. Trueblood, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 737,520, Nov. 1, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,540

Int. Cl.³ H01L *23/02, 23/12, 39/02*

U.S. Cl. 357—74 **11 Claims**



1. A hermetically sealed thermal shock resistant ultraviolet responsive semiconductor device comprising:

a ceramic base member,

an ultraviolet responsive chip mounted on said ceramic base member,

a ceramic cap constructed of the same material as said base member and having an aperture therethrough,

an ultraviolet transmitting window consisting of a sheet of ultraviolet transmitting material having a coefficient of thermal expansion that is compatible with that of the cap sealingly mounted on and bonded directly to said ceramic cap member covering and hermetically sealing said aperture, and

said ceramic base and cap members hermetically sealed together so that said window is disposed over said chip.

4,326,215

ENCAPSULATED SEMICONDUCTOR DEVICE WITH A METALLIC BASE PLATE

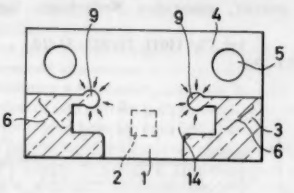
Hiromichi Suzuki, Tokyo, and Susumu Okikawa, Ohme, both of Japan, assignors to Hitachi, Ltd. Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,387

Claims priority, application Japan, Feb. 23, 1979, 54-19830

Int. Cl.³ H01L *23/02, 23/28, 23/48*

U.S. Cl. 357—81 **7 Claims**



1. A resin-molded semiconductor device comprising:

a metallic base plate which includes a first sheet portion having a first pair of opposing sides, said sides defining a width of said first sheet portion, and a second sheet portion extending from another side of said first sheet portion which is located in a direction which crosses said first pair of sides of said first sheet portion, said second sheet portion having a second pair of opposing sides extending in the same direction as that of said first pair of opposing sides, the width of said second portion defined by said second pair of opposing sides being less than the corresponding width of said first sheet portion, said second sheet portion adjoining in a middle part of said another side so as to be line-symmetric with respect to a straight line to said another side;

a pair of arcuate recess portions respectively provided in said first and second sheet portions in an area where said another side and the respective second sides intersect each other;

a semiconductor element fixed to said second sheet portion;

a plastic package which covers said semiconductor element and said second sheet portion, but which does not cover said first sheet portion; and

mounting means provided in said first sheet portion for mounting said first sheet portion on an external heat sink.

4,326,216

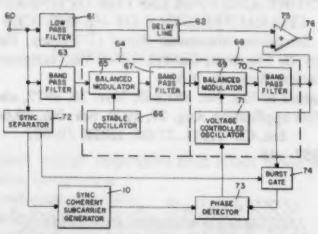
SYNCHRONOUS COLOR CONVERSION SYSTEM

Peter W. Jensen, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 28, 1974, Ser. No. 484,184

Int. Cl.³ H04N *9/491*

U.S. Cl. 358—8 **11 Claims**



1. A system for processing a composite color television signal having vertical field, horizontal line, and color burst synchronizing components and incoherent luminance and chrominance components, said luminance component being coherent with said horizontal line synchronizing component,

said chrominance component being coherent with said color burst synchronizing component, and said components being at nominal transmission frequency bands, comprising:

(a) means coupled to receive said composite signal and separate said chrominance and luminance components;

(b) means responsive to said horizontal line synchronizing component to generate a first reference signal coherent with said luminance component;

(c) means for generating a second reference signal at a known nominal frequency;

(d) means responsive to the color burst synchronizing component and one of said first and second reference signals for providing a phase corrected reference signal, the other of said first and second reference signals being a phase uncorrected reference signal;

(e) decoding means coupled to receive said separated chrominance component for frequency decomposing it in response to and with respect to the phase of a decoding reference signal;

(f) encoding means coupled to receive said frequency decomposed chrominance component for reconstituting the chrominance component at said nominal transmission frequency in response to and with respect to the phase of an encoding reference signal; and

(g) one of said phase corrected and said phase uncorrected reference signals coupled to the decoding means as the decoding reference signal and the other signal coupled to the encoding means as the encoding reference signal.

4,326,217

REVERSED IMAGE SENSING APPARATUS

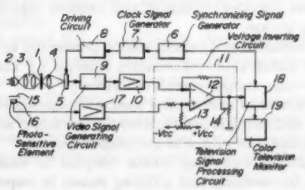
Teruo Iwasawa, Mitaka; Masafumi Yamazaki, Okaya; Kosaku Tsuboshima, Hachioji; Shuichi Takayama, Hachioji, and Yoshio Nakajima, Hachioji, all of Japan, assignors to Olympus Optical Co. Limited, Japan

Filed Oct. 22, 1979, Ser. No. 87,233

Claims priority, application Japan, Nov. 2, 1978, 53-134427

Int. Cl.³ G03F *3/10*; H04N *1/40, 1/028, 3/36*

U.S. Cl. 358—76 **6 Claims**



1. In a reversed image sensing apparatus comprising a light source for illuminating a record medium having recorded thereon picture images to be sensed, an image sensor formed of at least one array of charge coupled devices and a driving circuit for driving the array of charge coupled devices in accordance with clock pulses and synchronizing signals to derive a discrete pulse-like signal, a video signal generating circuit for converting the discrete pulse-like signal into a continuous video signal having an appropriate level and a differential amplifier having a first input for receiving the video signal and a second input for receiving a reference voltage generated by a reference voltage generator to produce an inverted video signal with respect to a reference level defined by said reference voltage, the improvement comprising: providing said reference voltage with a photosensitive element for receiving light emitted from said light source to produce a correction signal corresponding to the intensity variation of said light, and a controlling circuit for automatically adjusting the reference voltage in accordance with the correction signal.

4,326,218

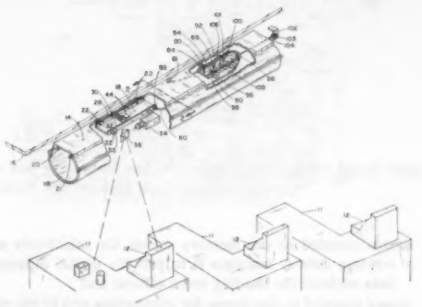
SURVEILLANCE SYSTEM

John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030, and Paul A. VanDusen, 2725 Evans Mill Rd., Lithonia, Ga. 30085

Filed Nov. 14, 1980, Ser. No. 206,705

Int. Cl.³ H04M *7/18*

U.S. Cl. 358—108 **9 Claims**



1. A surveillance system comprising:

an elongated track positioned along a path;

a carriage adapted to be supported on and be movable along said track;

electromotive means coupled to said carriage for selectively moving said carriage along said track;

a television camera;

mounting means for pivotally supporting said camera on said carriage about an axis lying along and central to said track, and wherein the direction of view of said camera generally lies along said axis;

pivot drive means interconnected to said mounting means, and responsive to an input signal for rotating said mounting member about said axis;

a mirror supported by said mounting means and angularly positionable in a range between the position wherein its reflective surface is normal to the axis of view of said camera and a position where a reflective surface is parallel with said axis, and said mirror being positionable to intercept the view of said camera and enable viewing of a region generally to one side of said axis;

display means electrically coupled to said camera for displaying the output of said camera; and

operating means comprising:

carriage control means electrically coupled to said electromotive means for selectively positioning said carriage, and thereby said camera, along said track, and

control means for selectively providing electrical signals to said pivot drive means for effecting the tilting of said mounting means and thereby the tilting of the field of view of said camera as seen through said mirror.

4,326,219

DIGITAL ERROR MEASURING CIRCUIT FOR SHADING AND REGISTRATION ERRORS IN TELEVISION CAMERAS

Karl H. Griesshaber, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1980, Ser. No. 139,604

Int. Cl.³ H04N *9/62*

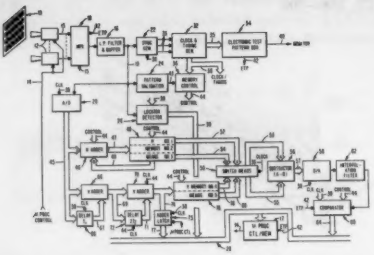
U.S. Cl. 358—163 **18 Claims**

1. A circuit for measuring H and V spatial and shading errors existing between a video test signal generated by a pickup tube of a television camera head and an electronic test pattern signal of perfect geometry, comprising the combination of;

means for receiving the video test pattern signal and for digitizing therefrom digital data A and data B correspond-

ing to summations of selected digital samples of the video test signal which contain shading error effects;

memory means coupled to the means for receiving and digitizing for selectively storing the digital data A and data B;



means coupled to the memory means for selectively subtracting data A and data B to provide digital difference data without the shading error effects; and

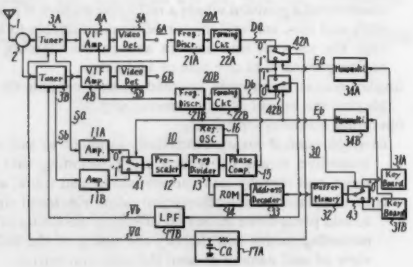
means coupled to the means for subtracting and to the electronic test pattern signal for comparing the digital difference data with the electronic test pattern signal to provide the spatial error information.

4,326,220

TELEVISION RECEIVER

Takao Mogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,587
Claims priority, application Japan, Sep. 5, 1979, 54-113992
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—191.1 **18 Claims**



1. A television receiver comprising:

at least two signal receiving means, each corresponding to a respective channel and each including tuner means for selecting said respective channel in response to a tuning control signal;

storage means for storing each of said tuning control signals and for supplying said tuning control signals to said respective tuning means; and

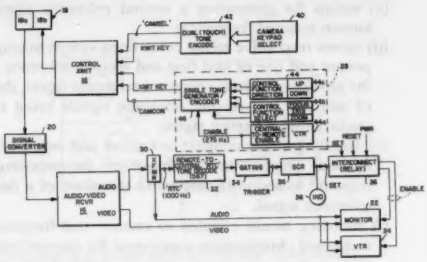
feedback means common to each of said at least two receiving means and adapted to be selectively operative with one of said at least two signal receiving means for producing the tuning control signal for the signal receiving means with which it is operative and supplying said respective tuning control signal to said storage means.

4,326,221

CENTRAL/REMOTE TELEVISION MONITORING SYSTEM

Gene G. Mallos, 12½ S. Main, and Lowell T. Bartholomew, 920 S. Jefferson, both of Webb City, Mo. 64870

Filed Sep. 30, 1980, Ser. No. 192,169
Int. Cl.³ H04N *5/24, 7/10*
U.S. Cl. 358—210 **10 Claims**



1. A central/remote television monitoring system for controlling a plurality of television cameras located at a remote station, said system comprising:

a central control and monitoring station having a transmitter for transmitting control signals from the central station to the remote station and a receiver for receiving audio/video information transmitted to the central station from the remote station;

first selection and encoding means at said central station for generating coded selection signals for selecting a one of n television cameras at the remote station;

second selection and encoding means at said central station for generating encoded control signals for controlling the operation of the selected television camera, the control signals generated by said second selection and encoding means including an enable signal for enabling said remote station;

said first and said second selection and encoding means connected to said central station transmitter for transmitting the encoded selection and control signals to said remote station;

utilizing means at said central station connected to an output of said audio/video information receiver for utilizing the audio/video output signals therefrom;

decoder means at said central station connected to the output of said information receiver for decoding an encoded enable signal provided at the output thereof;

central station switching means coupled to said utilizing means for enabling said utilizing means in response to an enable signal said switch means coupled to said second selection and encoding means and said decoding means so that an enable signal provided from either said second selection and encoding means or from said decoder means will enable said switch means to enable said utilizing means;

a remote station having a plurality of television monitoring cameras connected thereto, a control signal receiver for receiving the encoded control signals transmitted from the central station transmitter, and an audio/video transmitter for transmitting audio/video information from at least one of said n cameras to said audio/video receiver at said central station;

first decoder means connected to said receiver at said remote station for decoding the encoded control signals transmitted from said central station for selecting a one of said n cameras;

second decoder means connected to said receiver at said remote station for decoding the encoded control signals transmitted from said central station for effecting control

over the selected one of said n cameras and the encoded enable signal transmitted from said central station;

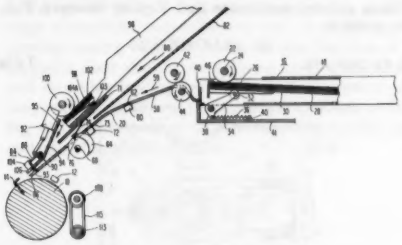
remote station switching means connected to said first and second decoders and said audio/video transmitter for connecting the selected one of said n cameras to said audio/video transmitter in response to the decoded enable signal transmitted from said central station; and

an enable signal encoding means coupled to the input of said audio/video transmitter and said remote station switching means for transmitting an enable signal to said central station to enable same and to enable said remote station switching means.

4,326,222
METHOD OF AND APPARATUS FOR FACSIMILE SHEET FEEDING

John L. Connin; G. William Hartman, Jr., both of Longwood, and Ronald F. Schley, Ocoee, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,339
Int. Cl.³ H04N *1/08*
U.S. Cl. 358—292 **19 Claims**



1. Facsimile apparatus comprising scanning means adapted to scan a sheet and improved sheet transport means comprising:

sheet storage means adapted to store a plurality of sheets;

a transport path from said sheet storage means to said scanning means;

rear feed means for moving sheets along said path;

forward feed means for moving sheets longitudinally along and laterally with respect to said path;

sensor means for sensing the position of said sheets at an intermediate position along said transport path; and

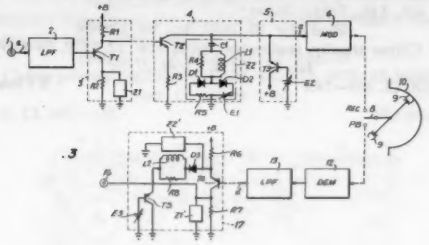
means coupled to said sensor means for disengaging said rear feed means while said forward feed means engage said sheets.

4,326,223
VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS WITH GAIN CONTROL

Kazuo Yamagiwa, Tokyo, and Yukihiko Machida, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,749
Claims priority, application Japan, May 2, 1978, 53-53108
Int. Cl.³ H04N *5/79*
U.S. Cl. 360—33 **26 Claims**

1. Apparatus having a section for reproducing an information signal from a recording medium on which said signal has been recorded with portions of said information signal greater than a predetermined level having been clipped, said section comprising a restoring circuit for restoring the clipped portion of the reproduced information signal including a gain control element having a variable gain, and compensating means DC coupled to said gain control element to cause the latter to have a first gain when said reproduced information signal is below said predetermined level and to have a second, higher gain for

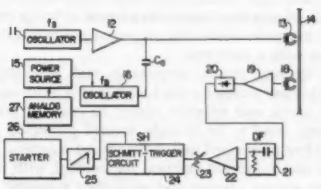


each said portion of said reproduced information signal when the latter reaches said predetermined level.

4,326,224
AUTOMATIC SIGNAL COMPENSATION RECORDING AND REPRODUCING APPARATUS

Takuyo Kogure, Neyagawa, and Hidemasa Kitagawa, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 956,366, Oct. 31, 1978. This application Apr. 30, 1980, Ser. No. 145,359
Claims priority, application Japan, Aug. 15, 1977, 52-109201[U]; Apr. 20, 1978, 53-47343
Int. Cl.³ G11B *5/45, 5/02*
U.S. Cl. 360—65 **4 Claims**



1. A magnetic recording and reproducing apparatus including a recording characteristic adjusting device comprising:

means for generating a square wave signal;

amplifier means having a gain versus frequency characteristic wherein a gain of said amplifier means varies with the frequency of an input signal applied thereto, said amplifier including means for adjusting said gain versus frequency characteristic;

means for recording said square wave signal on a magnetic recording medium;

means for reproducing said recorded square signal from said magnetic recording medium;

means for extracting first and second frequency signal components from said reproduced square wave signal, said extracted signal components including at least one higher harmonic component from said reproduced square wave signal;

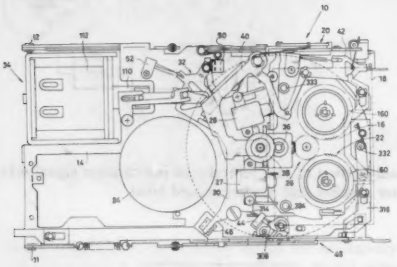
means for comparing said extracted signal components; and,

means for controlling said adjusting means to adjust said gain versus frequency characteristic in a frequency region around said higher harmonic component in response to the output of said comparing means.

4,326,225
AUTOMATIC REVERSE CASSETTE TAPE RECORDER

Akira Osanai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,488
Claims priority, application Japan, Mar. 22, 1979, 54-33698
Int. Cl.[3] G11B *15/44, 21/08*
U.S. Cl. 360—74.1 8 Claims



5. An automatic reverse cassette tape recorder which comprises:

a chassis;

operation control members including a recording mode-setting member;

a pair of magnetic heads;

a rotatable magnetic head-supporting board which supports said pair of magnetic heads spaced from each other;

means for rotatably mounting said head-supporting board to said chassis so that said head-supporting board is rotatable about a rotation center which is disposed between said magnetic heads;

means for detecting the terminal end of a tape;

means responsive to at least one of said end of tape detecting means and said operation control members for causing rotation of said head-supporting board to bring one of the paired magnetic heads to a projected position suitable for contact with a tape; and

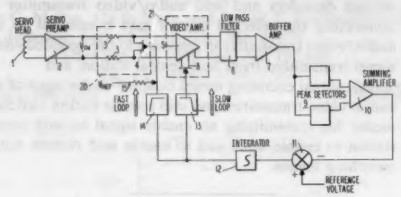
cassette ejecting means coupled to said head-supporting board to eject a cassette and to rotate said head-supporting board about said rotation center to cause a prescribed magnetic head to be brought to said projected position only when prescribed one of the paired magnetic heads is not in said projected position for contact with the tape, thereby always causing said prescribed magnetic head to be projected to a position suitable for contact with the tape when a cassette is ejected by said ejecting means.

4,326,226
CONSTANT BANDWIDTH AUTOMATIC GAIN CONTROL

James J. Touchton, Boulder, and Richard J. Pederson, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 8, 1980, Ser. No. 147,724
Int. Cl.[3] G11B *21/10, 5/02*
U.S. Cl. 360—77 10 Claims

1. In apparatus for the control of the position of a recording head with respect to a magnetic data storage media, said position being controlled by drive means, said drive means being controlled by a servo system, said servo system receiving signals from one of said magnetic disks and comprising an automatic gain control circuit for control of amplification applied to said servo data, the improvement which comprises said automatic gain control circuit comprising first and second gain control loops, each of said loops comprising a variable gain element, one of said variable gain elements responding to substantially slower variations in the amplitude of said servo signals and one of said loops responding to substantially faster variations in the amplitude of said input signal, whereby the

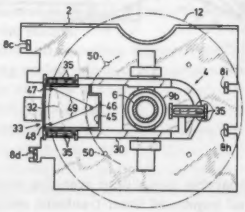


automatic gain control circuit of said servo loop is of substantially constant bandwidth.

4,326,227
APPARATUS FOR RECORDING AND READING DATA FROM A MAGNETIC PLATE

Peter Schlüter, Landau, Fed. Rep. of Germany, assignor to Schlüter Electronic GmbH, Landau, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,640
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905836
Int. Cl.[3] G11B *5/56*
U.S. Cl. 360—99 7 Claims



1. An apparatus for recording and reading-out data from a circular, foil-like magnetic plate, which is movably arranged in an interchangeable cassette having slot-like openings on both sides, and has a centrally arranged perforation, said apparatus comprising in combination:

a first drive shaft on which said perforation of said magnetic plate is capable of being coupled in such a way as to bring about rotation of said magnetic plate;

a first linear motor for driving said first drive shaft of said magnetic plate;

a second drive shaft;

a second linear motor for driving said second drive shaft;

a screw spindle in the form of a track spring operatively connected with said second drive shaft;

a recording-reading head carriage of synthetic material movably supported along said track spring;

a recording-reading head held by said recording-reading head carriage;

a feeler pin mounted on a carrier plate for engaging said track spring and advancing said recording-reading head carriage and said recording-reading head therealong radially of said magnetic plate;

means mountable on said recording-reading head carriage for pressing said recording-reading head through said slot-like openings of said cassette against said magnetic tape for adjusting said recording-reading head to predetermined information tracks of said magnetic tape; and

a measuring device which operates in conjunction with a control electronic circuit for controlling the rotations of said first linear motor for turning said magnetic plate, and

the rotations of said second linear motor for moving said recording-reading head carriage, said measuring device including: a measuring wire tensioned in an acute angle and arranged on said recording-reading head carriage in a plane parallel to the turning plane of said first linear motor, the bisection of the angle of said measuring wire coinciding with the direction of movement of said recording-reading head carriage, the ends of the legs of said angle-forming measuring wire being connected with said control electronic system; and at least one magnetic pin operatively arranged on said first linear motor, said measuring wire electromagnetically cooperating with said at least one magnetic pin in such a way that the latter is capable of being passed close to said measuring wire transverse to the bisection of the angle of said measuring wire during rotation of said first linear motor for generating a voltage impulse during every passage over a leg of said measuring wire, the time interval between the passage of said at least one magnetic pin over the first leg of said measuring wire, and passage over the second leg of said measuring wire being capable of being measured in said control electronic system, with the resulting value being used as a basis for the desired control of the movements of said magnetic plate and said recording-reading head carriage of synthetic material by an exact access of said recording-reading head for every suitable location of the magnetic plate directly to measure exact adjustment of said recording-reading head with greatest possible accuracy without adjustment of the device regardless of finishing and age tolerances of said recording-reading head carriage of synthetic material.

4,326,228

MAGNETIC TRANSDUCER SUPPORTING APPARATUS

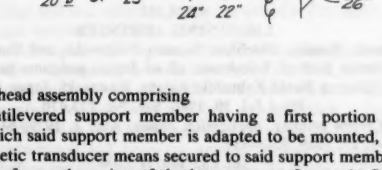
Hitoshi Sakamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 29, 1980, Ser. No. 126,019

Claims priority, application Japan, Mar. 9, 1979, 54-27541

Int. Cl.³ G11B *21/18, 21/24*

U.S. Cl. 360—109 **23 Claims**



1. A head assembly comprising

a cantilevered support member having a first portion at which said support member is adapted to be mounted,

magnetic transducer means secured to said support member at a free end portion of the latter remote from said first portion,

at least a part of said support member extending from said first portion toward said free end portion being electrostrictive, and

conductive layers on at least a portion of said electrostrictive part of the support member for causing flexing thereof in response to application of a drive signal to said conductive layers, said electrostrictive part having said conductive layers thereon for a distance from said first portion which is only a fraction of the distance between said first and free end portions so as to exclude said free end portion from flexing in response to said drive signal.

4,326,229

MAGNETIC RECORD MEMBER AND PROCESS FOR MANUFACTURING THE SAME

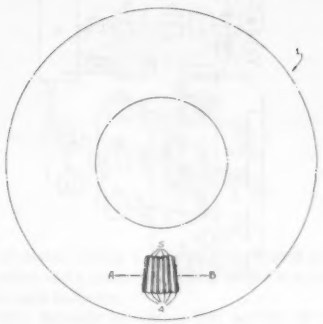
Masahiro Yanagisawa, Tokyo, Japan, assignor to Nippon Electric Co. Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,731

Claims priority, application Japan, Dec. 19, 1978, 53-160842

Int. Cl.³ G11B *5/82*

U.S. Cl. 360—135 **10 Claims**



1. A magnetic record member comprising:

a disk-shaped recording medium base having a specular magnetic recording medium surface; and

a protective film formed on said base and having a surface roughness of 0.02 to 0.05 microns with sinusoidal jogs which are distributed at a pitch of 10 to 200 microns and extend radially between the inner and outer circumferences of said base.

2. A magnetic record member as defined in claim 1, wherein said base comprises an aluminum alloy disk, a nickel-phosphorous alloy layer formed thereon, and a cobalt-nickel-phosphorous alloy layer formed on said nickel-phosphorous alloy layer and serving as a recording medium.

10. In a spin-coating process for forming a protective coating on a disk-shaped magnetic recording medium base having a recording medium surface roughness of a thickness less than 0.02 microns, an improvement comprising the steps of

depositing onto said base a solution of coating material comprising a solvent having a boiling point of about 70° C. to about 100° C.; and

controlling the spin rate of the recording medium base to a rate at which a protective film is formed whose surface is characterized by radially extending jogs defining a protective film surface roughness which is greater than the surface roughness of the underlying recording medium and equal to or less than 0.05 microns.

4,326,230

CIRCUIT FOR MONITORING THE VOLTAGE STRESS OF A CAPACITOR

Michael Becker, Uttenreuth; Klaus Renz, Fürth; Manfred Weibelzahl, Weiher; Alfons Fendt, Erlangen; Dusan Povh, Nuremberg; Gerhard Schuch, Erlangen, and Hermann Waldmann, Weiher, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,809

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929272

Int. Cl.³ H02H *7/16*

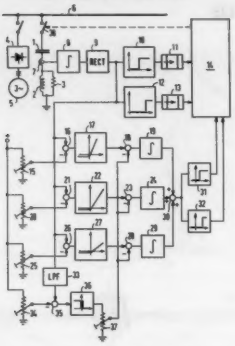
U.S. Cl. 361—17 **4 Claims**

1. A circuit for monitoring the voltage stress of a capacitor CHARACTERIZED IN THAT there are provided

a. means for producing a first signal representative of the voltage stress of the capacitor,

b. comparison means for comparing said first signal with a predetermined over-voltage value,

c. characteristic-curve generator means having a predetermined transfer function and connected to said comparison means for producing a second signal responsive to said first signal and said transfer function when said first signal exceeds said predetermined over-voltage value,



d. integration means having a predetermined integration time constant and connected to said characteristic-curve generator means for integrating said second signal and producing an overload signal, and

e. continuous value means for producing a reverse integration signal which is responsive to a predetermined permissible continuous capacitor stress value and which is conducted to said integration means for adjusting the level of said overload signal.

4,326,231

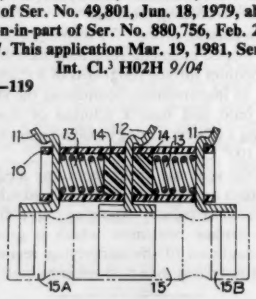
CLIP-ON PROTECTOR

Gerald Coren, 18 Willben La., Plainview, N.Y. 11803

Continuation of Ser. No. 49,801, Jun. 18, 1979, abandoned, and a continuation-in-part of Ser. No. 880,756, Feb. 24, 1978, Pat. No. 4,191,987. This application Mar. 19, 1981, Ser. No. 245,501

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—119 **4 Claims**



1. A clip-on protection device for use with an over-voltage protector that is defined by spaced electrodes one of which is common or grounded, comprising a housing, contact means disposed in insulated spaced array in said housing, heat conduction means disposed in said housing and electrically insulated and spaced from said contact means, each of said contact means and heat conduction means including means extending from said housing and adapted detachably to engage the spaced electrodes of the protector such that said heat conduction means is in thermal and electrical communication with the grounded electrode of the protector and each of said contact means is in respective electrical communication with a line-electrode of the protector, and movable means disposed in said housing and adapted electrically to ground a respective one of said contact means, said movable means including fusible means in thermal contact with said heat conduction means such that movable means is normally electrically insulated from said heat conduction means until a sustained overload condition causes said fusible means to fuse whereupon said movable means engages said heat conduction means electrically to short said contact means to ground.

4,326,232

LIGHTNING ARRESTER

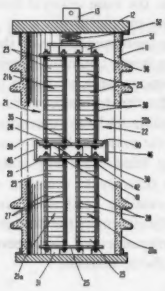
Susumu Nishiwaki, and Toshikazu Satoh, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 9, 1980, Ser. No. 138,675

Claims priority, application Japan, Apr. 16, 1979, 54-49426[U]

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—127 **9 Claims**



1. A lightning arrestor comprising:

a housing;

a plurality of elongated electrical resistor stacks disposed in side-by-side relation in said housing and electrically connected in parallel;

each of said stacks including a plurality of sub-stacks formed by stacked, non-linear resistor elements of uniform size, said sub-stacks of each stack being aligned end-to-end;

means electrically connecting adjacent sub-stacks in each stack;

the sub-stacks of each stack having the same number of resistor elements as the adjacent sub-stack of a parallel stack;

and means mechanically connecting but electrically insulating adjacent sub-stacks of parallel stacks.

4,326,233

LIGHTNING ARRESTER

Satoru Yanabu, Machida; Susumu Nishiwaki, and Toshikazu Satoh, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 30, 1980, Ser. No. 173,478

Claims priority, application Japan, Aug. 2, 1979, 54-98135; Mar. 17, 1980, 55-34831

Int. Cl.³ H02H *1/04*

U.S. Cl. 361—127 **8 Claims**

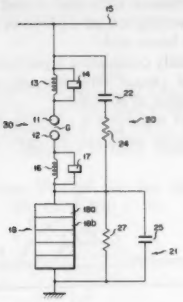
1. A lightning arrester which comprises:

a valve block formed of a plurality of nonlinear resistor elements;

discharge gap means which is connected in series to said valve block and defines a prescribed space therebetween; and

impedance circuit means which varies a ratio between a level of voltage impressed on said valve block and that applied to said gap means in accordance with the waveform of lightning surge voltage impressed on the lightning arrester, thereby maintaining the spark-starting voltage of said gap means substantially at a fixed level, said impe-

dance circuit means being formed of at least first and second impedance elements respectively connected in parallel to said valve block and gap means, said first impedance element being constituted by a parallel circuit of a resistor and capacitor, and said second impedance element being formed of a series circuit of a resistor and capacitor.



4,326,234

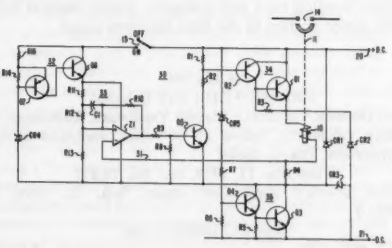
ELECTRICALLY HELD POWER RELAY CIRCUIT WITH REDUCED POWER DISSIPATION

Kenneth C. Shuey, Cridersville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 6, 1980, Ser. No. 156,960

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 **2 Claims**



1. Relay circuitry, for holding an electrically held relay closed with minimized power dissipation, comprising:

a relay coil in a series current path between DC input voltage terminals;

a switching current regulator for permitting an applied DC input voltage to develop current in said coil reaching a level sufficient to close the relay and then to remove applied voltage from said coil during which a current sufficient to hold the relay closed is maintained by the coil inductance and restoring applied voltage to said relay before the coil current drops below the minimum holding current level;

said switching current regulator comprising a gated series voltage regulator for maintaining a regulated voltage on a resistive voltage divider connected to one input of a voltage comparator, a resistive shunt in series with said relay coil connected to apply a coil current indicating voltage to the other input of said comparator, and a first transistor switch in series with said relay coil and responsive to the output of said comparator to turn off said series current path when coil current has reached the closing level and to turn on said series current path when the coil current drops to a level approaching the holding current level.

4,326,235

CONTAINER

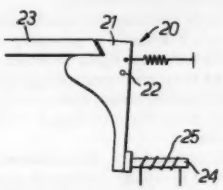
Norman K. Hopkins, Orchard House, Whinstones Rd., Ascot, SL5 9HW, and Lawrence Klyne, 179B Haverstock Hill, London, NW. 3, both of England

Filed Jan. 28, 1980, Ser. No. 117,531

Claims priority, application United Kingdom, Jan. 26, 1979, 02796/79

Int. Cl.³ H01H *47/32*; E05C *3/26*

U.S. Cl. 361—156 **8 Claims**



1. A container having a lid resiliently loaded towards an open position and a catch for holding the lid in a closed position, the catch including

a member movable between a first position in which the member is capable of holding the lid in the closed position and a second position in which the member is not capable of holding the lid,

a permanent magnet arranged to hold the member when in the first position,

means to urge the member from the first position to the second position including an inclined edge portion of the lid arranged to engage a part of the member and to transmit there-to a force derived from the force of the resilient loading of the lid, and

an electromagnet so arranged that when energised the electromagnet produces a field which opposes the field of the permanent magnet sufficiently to allow the member to be released from the first position.

4,326,236

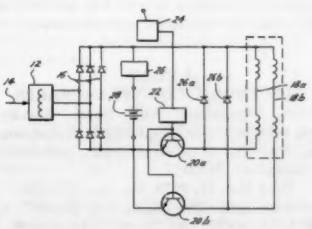
CONTROL SYSTEM FOR AN ELECTRO-MAGNETIC BRAKE

Willie L. McNair; Donald L. Lipke, both of Fort Bend County; Stanley H. Van Wambeck, Harris County, and Conrad J. Huelsman, Fort Bend County, all of Tex., assignors to Baylor Company, Sugar Land, Tex.

Filed Sep. 10, 1979, Ser. No. 74,205

Int. Cl.³ F16D *67/06*

U.S. Cl. 361—170 **7 Claims**



1. A control system for providing controllable direct current power for energizing an electromagnetic brake comprising,

an alternating current power supply,

power rectifier means connected to the alternating current

power supply for supplying direct current power to said brake,

power switch means connected between the rectifier and the brake for controlling the direct current power supplied to the brake,

a control circuit controlling the actuating of said power switch means including,

a brake control connected to a variable output transformer, the input of said transformer being connected to a fixed control voltage supply and whose output is varied by said brake control,

means connected between the transformer output and said power switch means for providing a variable pulse width direct current signal in which the pulse width varies with the transformer voltage output for actuating said power switch means, and

wherein the means for providing a variable pulse width signal includes,

a rectifier connected to the transformer,

an oscillator providing a sawtooth output, and

a comparator connected to the rectifier and sawtooth oscillator to provide the variable pulse width signal.

4,326,237

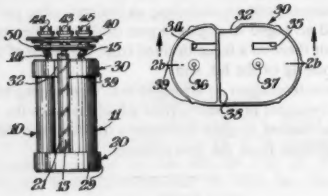
DUAL AC MOTOR-RUN CAPACITORS

Paul M. Markarian, North Adams, Mass., and David C. Howe, Stamford, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 2, 1981, Ser. No. 221,967

Int. Cl.³ H01G *4/38*

U.S. Cl. 361—329 **9 Claims**



1. A dual AC motor-run capacitor comprising at least two round metallized electrode film capacitor sections having hollow winding cores, a pair of oval plastic insulative end caps having two long sides are cap an upper cap, the upper of said end caps having at least one slot therein and an indentation along one of the long sides thereof, each of said end caps having at least two upstanding pins engaging said hollow winding cores to hold said sections side-by-side, electrode tabs connecting the electrodes of said sections to terminals mounted in a cover, one of said tabs passing through said slot in said upper end cap, said sections mounted in said end caps being placed in an oval can and sealed with said cover.

4,326,238

ELECTRONIC CIRCUIT PACKAGES

Shiro Takeda, Sagamihara; Yuji Nagai, Komae; Minoru Nakajima, Kawasaki; Kunihiko Hayashi, Yokohama, and Koji Serizawa, Aizuwakamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 21, 1978, Ser. No. 971,658

Claims priority, application Japan, Dec. 28, 1977, 52-160686; Dec. 28, 1977, 52-160687; Dec. 28, 1977, 52-160689

Int. Cl.³ H05K *7/20, 3/32;* C08K *3/22*

U.S. Cl. 361—386 **38 Claims**

1. An electronic circuit package comprising

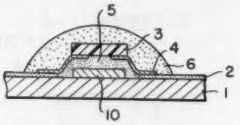
an insulating circuit substrate having plural wirings thereon,

at least one electronic circuit element having plural beam leads bonded onto respective one of said wirings of the circuit substrate with a gap between the circuit substrate and the electronic circuit element and its beam leads,

a first thermally conductive layer of an electrically insulating material comprising an oxidatively curable resin filling the gap in contact with said circuit element and beam leads and covering at least a portion of the circuit element and its beam leads, and

a second thermally conductive layer located within said gap between said circuit substrate and said first thermally conductive layer of material.

8. A method of mounting a plurality of electronic circuit elements on a circuit substrate, for easy selective removal if



any circuit element proves defective, by bonding each said electronic circuit element onto said circuit substrate with a gap between said circuit substrate and said electronic circuit element, said method comprising:

filling a liquid comprising an oxidatively curable resin at least into said gap,

allowing at least the surface portions of said resin to be oxidatively cured by exposure to an atmosphere containing oxygen, and

removing each said defective element by applying a small force to the oxidatively cured surface portions of said resin bonding each said defective circuit element before the entire portion of the resin becomes cured.

4,326,239

PRINTED CIRCUIT BOARD

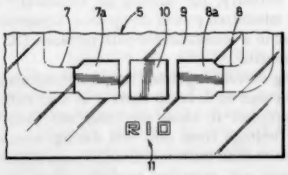
Mitsuo Ōsawa, Chigasaki; Masato Yamamura, Kamakura, and Toshio Takahashi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,471

Claims priority, application Japan, Sep. 21, 1978, 53-129884[U]

Int. Cl.³ H05K *01/18*

U.S. Cl. 361—410 **3 Claims**



1. A printed circuit board comprising:

(a) an insulating board;

(b) at least one pair of conductive patterns arranged on said insulating board and spaced from each other by a predetermined length;

(c) a solder resisting layer having a predetermined color formed on said insulating board;

(d) an adhesive layer visual boundary guide in the form of a paint layer of insulating material formed on the solder resisting layer in the space between said conductive patterns within a predetermined range;

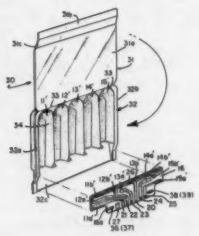
(e) said paint layer having another color contrasting with said predetermined color of the solder resisting layer;

(f) an adhesive layer applied onto said paint layer but not substantially beyond its boundaries;
(g) a leadless electric part being fixed in contact with said conductive patterns with said adhesive layer; and
(h) said paint layer having a good affinity with said solder resisting layer and adhesive layer such that said leadless electric part is fixed securely in position.

4,326,240
MULTILAMP PHOTOFLASH UNIT HAVING ENGAGEABLE CONNECTOR TAB

John W. Shaffer, Williamsport, and David R. Broadt, Lewisburg, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 27, 1980, Ser. No. 181,934
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **11 Claims**



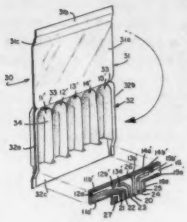
1. In a multilamp photoflash unit connectable to a source of firing pulses, said unit including a printed circuit board having electrically conductive circuit patterns disposed on a surface thereof, said circuit patterns including a plurality of terminal areas at one side edge of said circuit board that are selectively interconnected with a plurality of lamp contact areas, and a plurality of flashlamps each having a pair of lead-in wires secured in electrical connection with respective ones of said lamp contact areas, all of said terminal areas and said lamp contact areas connected to said lead-in wires being disposed on the same one side of said circuit board, the improvement comprising a flat projecting tab at said one side edge of said circuit board upon which said terminal areas are located adjacent to one another, and a plurality of engageable means in the form of apertures or recesses contained in said tab and spaced apart from said terminal areas and said one side edge, said tab being insertable in a receiving socket of a firing pulse source for connecting said terminal areas to respective contacts of said firing pulse source, and said engageable means being disposed on said tab in nonalignment with any of said terminal areas with respect to the direction of insertion into said receiving socket, whereby said apertures of recesses render said tab releasably engageable by socket means independent of said firing pulse contacts for securely retaining said photoflash unit in said socket.

4,326,241
MULTILAMP PHOTOFLASH UNIT

David R. Broadt, Lewisburg; Donald W. Hartman; John W. Shaffer, both of Williamsport, all of Pa., and Emery G. Audesse, Beverly, Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 27, 1980, Ser. No. 181,936
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **23 Claims**

1. A multilamp photoflash unit comprising, in combination, a one-piece housing member having a light-transmitting front portion folded over a back portion containing a plurality of lamp-receiving cavities, a plurality of flashlamps each disposed in a respective one of said cavities and enclosed by said folded-over housing member, and terminal means joined to said housing member and coupled to said lamps for enabling flashing of

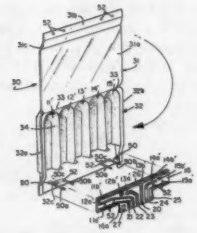


the lamps in response to flash actuation signals applied to said terminal means.

4,326,242
MULTILAMP PHOTOFLASH UNIT HAVING SECURED HOUSING

David R. Broadt, Lewisburg; Carl F. Kackenmeister, and John W. Shaffer, both of Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 27, 1980, Ser. No. 181,938
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **22 Claims**



1. A multilamp photoflash unit comprising, in combination, a one-piece housing member having a light-transmitting front portion folded-over a back portion containing a plurality of lamp-receiving cavities, a plurality of flashlamps each disposed in a respective one of said cavities and enclosed by said folded-over housing member, terminal means joined to said housing member and coupled to said lamps for enabling flashing of the lamps in response to flash actuation signals applied to said terminal means, and means securing said front portion to said back portion at peripheral areas thereof comprising one or more staples, each of said staples having a pair of legs extending through both of said housing portions and having a center region bearing against an external surface of one of said portions, said legs being clinched onto an external surface of the other of said portions.

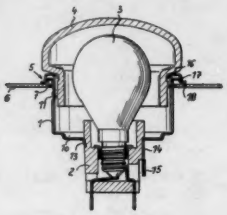
4,326,243
ELECTRIC LIGHT FIXTURE

Max Pistor, Kamp 3, 585 Schalksmuhle-Hulscheid, and Ferdinand Pistor, Spielbergweg 11, 5974 Herscheid, both of Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,402
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921425
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—368 **9 Claims**

1. An electric fixture for the illumination of ovens of electric ranges, comprising a pot-shaped metallic mounting part insert-

able into a cut-out in a wall of the oven and which holds the lamp socket and its lamp assembled, and a cover glass which is screwed on the front side into the mounting part, the mounting part having on its front side a stop rim and holding members corresponding to the edge of the cut-out and at its rear a central cut-out for the lamp socket which is held by spring tabs which are formed from the mounting part, the mounting part being provided on its wall with an internal thread and having over its entire length a smaller diameter than the stop rim, the mounting part having a plurality of radially outwardly extending spring tabs uniformly distributed on the periphery and cut



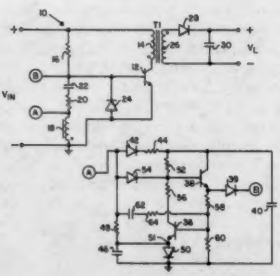
free laterally and towards the stop rim, which spring tabs are curved at least slightly more than corresponds to the curvature of the mounting part, and the spring tabs having noses which extend laterally outwards at their free end towards the stop rim, the stop rim being bent over towards the bottom of the mounting part and screw threads impressed radially between the spring tabs with a resiliently tensionable sealing ring of metal clamped between the stop rim and the cover glass, an axially extending radially outwardly protruding rib being formed on the mounting part and insertable in a groove in the cut-out as an anti-twisting device.

4,326,244

FLYBACK POWER SUPPLY BOOSTER CIRCUIT

Elliot Josephson, Los Altos, Calif., assignor to Astes Components, Ltd., Santa Clara, Calif.

Filed Dec. 18, 1980, Ser. No. 217,675
Int. Cl.³ H02H 7/122
U.S. Cl. 363—56 **9 Claims**



1. In a flyback power supply having a free-running mode comprised of input intervals, wherein a switch means causes current to be fed through a power transformer primary, thereby storing energy in said transformer, alternately followed by flyback intervals, wherein said switch means causes the power transformer primary to be open-circuited, and current is output from the transformer secondary into a secondary circuit until all of said stored energy is discharged, the length of said input intervals and flyback intervals being dependent upon the load on the secondary circuit, an improvement comprising:

means for detecting a high load condition; and

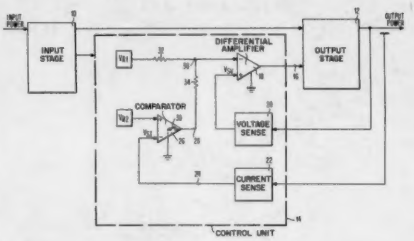
means responsive to said high load condition for causing said switch means to feed current through said transformer primary prior to the end of the free-running flyback interval.

4,326,245

CURRENT FOLDBACK CIRCUIT FOR A DC POWER SUPPLY

Mustafa Y. M. Saleh, Margate, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Feb. 23, 1981, Ser. No. 236,857
Int. Cl.³ H02P 13/00
U.S. Cl. 363—79 **6 Claims**



1. A DC power supply comprising:

a. input means for receiving input power at an input voltage;

b. output means, connected to said input means, for producing output power at another, output voltage, said output means having a control input and being responsive to a control signal applied to said control input to vary said output voltage; and

c. control means, connected to said output means, for producing said control signal, said control means including:

1. a differential amplifier having first and second inputs and an output connected to said control input of said output means, said differential amplifier producing said control signal at said output thereof;

2. a voltage divider circuit having two resistors connected in series with a first terminal at one end of the resistor series, a second terminal at the opposite end of the resistor series and a center terminal between the two resistors, said center terminal being connected to said first input of said differential amplifier;

3. output voltage sensing means, connected to said second input of said differential amplifier, for producing a signal representative of said output voltage;

4. a first reference voltage source connected to said first terminal of said resistor series;

5. a comparator, capable of assuming two logic states and having first and second inputs and an output connected to said second terminal of said resistor series, said comparator (1) assuming a first logic state and connecting said second terminal to ground if the voltage applied to said second input thereof exceeds the voltage applied to said first input thereof, and (2) assuming a second logic state and providing an open circuit to said second terminal if the voltage applied to said second input thereof is less than the voltage applied to said first input thereof;

6. a second reference voltage source connected to said first input of said comparator; and

7. output current sensing means, connected to said second input of said comparator, for producing a signal representative of the output current supplied by said output means at said output voltage;

whereby said output voltage is reduced by a prescribed amount when the voltage applied to the second input of said comparator exceeds the voltage applied to the first input thereof.

4,326,246

CIRCUIT ARRANGEMENT OF AN INVERTED CURRENT RECTIFIER WITH SELF COMMUTATION

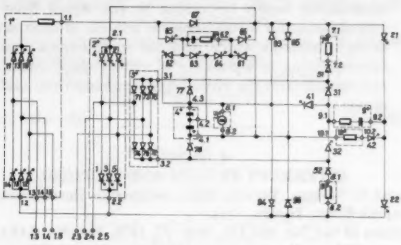
Jiri Winkler; Milan Kondr; Richard Jelinek; Jaroslav Hlousek; Jan Krtek; Josef Cibulka, all of Prague; Vladimir Mlynar, and Josef Simacek, both of Opava, all of Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Apr. 2, 1981, Ser. No. 250,251

Claims priority, application Czechoslovakia, Apr. 2, 1980, 2296-80

Int. Cl.³ H02M *1/06*

U.S. Cl. 363—138 **4 Claims**



1. Circuit arrangement of an inverted current rectifier with self commutation comprising a current source (**1^{o}**), a block (**2^{o}**) of the inverted rectifier, an accumulation rectifier (**3^{o}**), accumulation capacitors (**4^{o}**) with separating diodes (**77, 78**), a DC charging source (**5^{o}**), a block (**6^{o}**) for auxiliary accumulation with auxiliary accumulation thyristors (**61** to **66**) and a main separating diode (**67**), overswing reactors (**7^{o}, 8^{o}**) with overswing diodes (**51, 52**), commutation thyristors (**21, 22, 31, 32**), a commutation impulse circuit (**9^{o}**), a charging inductance (**10^{o}**), charging thyristors (**41, 42**) and limiting diodes (**93, 94, 95, 96**), the block (**2^{o}**) of the inverted rectifier, connected by its DC inlet terminals (**2.1, 2.2**) to inlet terminals (**1.1, 1.2**) of the current source (**1^{o}**), is furthermore connected over the main separating diode (**67**) by its outlet AC terminals (**2.3, 2.4, 2.5**) both to a load and to the accumulation rectifier (**3^{o}**), the DC terminals (**3.1, 3.2**) of which are connected through separating diodes (**77, 78**) to external terminals (**4.1, 4.3**) of a series connection of accumulation capacitors (**4^{o}**), to which external terminals (**4.1, 4.3**) a DC charging source (**5^{o}**) is connected in parallel, the first external terminal (**4.1**) being furthermore connected to the anode of the first auxiliary accumulation thyristor (**61**), the cathode of which is connected to the cathode of the fourth and to the anode of the sixth auxiliary accumulation thyristor (**64, 66**) respectively, and to cathodes of the third and fourth limiting diode (**95, 96**) respectively, whereby the anode of the third limiting diode (**95**) is connected to the cathode of the main separating diode (**67**) and the anode of the fourth limiting diode (**96**) is connected to the negative outlet terminal (**1.2**) of the current source (**1^{o}**), whereby the second external terminal (**4.3**) of the accumulating capacitors (**4^{o}**) is connected both to the cathode of the second auxiliary accumulation thyristor (**62**), the anode of which is connected with the cathode of the fifth and anode of the third auxiliary accumulation thyristor (**65, 63**) respectively, and with anodes of the first and second limiting diode (**93, 94**) respectively, whereby the cathode of the first limiting diode (**93**) is connected with the anode of the third limiting diode (**95**), with the first terminal (**7.1**) of the first overswing reactor (**7^{o}**) and with the anode of the first commutation thyristor (**21**), the cathode of which is connected both with the anode of the second commutation thyristor (**22**), with the second terminal (**9.2**) of the commutation impulse circuit (**9^{o}**) and also, through the second charging thyristor (**42**) and charging inductance (**10^{o}**), with cathodes of the third and fourth limiting diodes (**95, 95**) respectively, the cathode of the second commutation thyristor (**22**) is connected both with the anode of the fourth limiting diode (**96**) and, through the second overswing reactor (**8^{o}**), the second overswing diode (**52**), the fourth commutation thyristor (**32**), the third commutation thyristor (**31**) and the first overswing diode (**51**), to the second terminal (**7.2**) of the first overswing reactor (**7^{o}**), whereby the common junction of the third commutation thyristor (**32**) is connected both with the first terminal (**9.1**) of the commutation impulse circuit (**9^{o}**) and, through the first charging thyristor (**41**), with anodes of the first and second limiting diodes (**93, 94**), respectively, the common junction of the fourth commutation thyristor (**32**) and of the second overswing diode (**52**) is connected to the anode of the second limiting diode (**78**), the common junction of the first overswing diode (**51**) and of the third commutation thyristor (**31**) is connected to the cathode of the first overswing diode (**77**), furthermore the cathode of the third and the anode of the fourth auxiliary accumulation thyristor (**63, 64**), respectively are mutually interconnected and connected to the central terminal (**4.2**) of the accumulating capacitors (**4^{o}**), the anode of the fifth auxiliary accumulation thyristor (**65**) is connected with the anode of the main separating diode (**67**), the cathode of the sixth auxiliary accumulation thyristor (**66**) is connected with the cathode of the main separating diode (**67**) and the auxiliary accumulation block (**6^{o}**) is connected between the cathode of the fifth and the anode of the sixth auxiliary accumulation thyristor (**65, 66**), respectively.

4,326,247

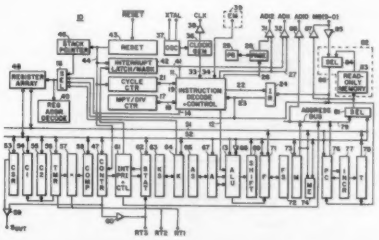
ARCHITECTURE FOR DATA PROCESSOR

George P. Chamberlin, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 25, 1978, Ser. No. 946,222

Int. Cl.³ G06F *9/16*

U.S. Cl. 364—200 **4 Claims**



1. A data processing system having an N-bit data bus, an M-bit data bus, and an M+N bit data address bus, and comprising: an instruction decoder for decoding instructions for the data processing system; an instruction register coupled to the instruction decoder for holding instructions to be decoded by the instruction decoder; an array of registers for storing variable data, the array of registers being coupled to the N-bit data bus; an arithmetic and logic unit coupled to the N-bit data bus and coupled to the instruction decoder, the arithmetic and logic unit being capable of performing operations on the data stored in the array of registers; a program counter for controlling sequence of instructions, the program counter being coupled to the address bus; a timer register capable of being incremented by one at a continuous rate, the timer register being coupled to the N-bit data bus; at least one capture register being capable of being loaded from the timer register, the at least one capture register being coupled to the N-bit data bus, to the timer register, and to an input terminal of the data processor system to allow the at least one capture register to be loaded from the timer register whenever a signal transition occurs on the input terminal; a compare register coupled to the N-bit data bus, the compare register being capable of being continuously compared for equality with the timer register to provide a signal when equality exists, the timer register thereby being capable of providing an output to the at least one capture register and of providing an output to be compared; and a

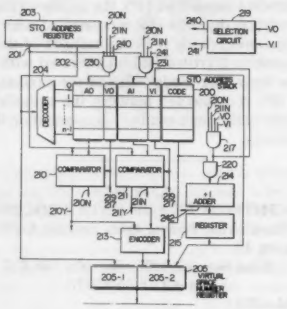
command shift register coupled to the N-bit data bus and to an output terminal of the data processing system, the command shift register providing temporary storage of data and shifting the data out to the output terminal upon a predetermined command.

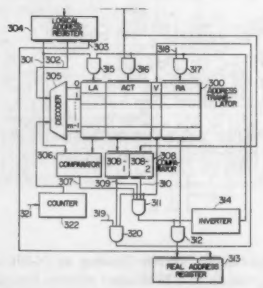
4,326,248

MULTIPLE VIRTUAL STORAGE CONTROL SYSTEM

Mamoru Hinai; Chikahiko Izumi, and Kazuo Hibi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,274
Claims priority, application Japan, Feb. 22, 1978, 53-18471
Int. Cl.³ G06F 9/36, 13/00
U.S. Cl. 364—200 **6 Claims**





1. A multiple virtual storage control system for a data processing system for handling a plurality of virtual spaces and having a translation table for translating virtual addresses indicative of addresses in the virtual spaces to real addresses, comprising:

first means for assigning a virtual space number to a supplied first address of said translation table;

said first means including a plurality of first storage locations for storing said first address and said virtual space number assigned to said first address;

said first means assigning, upon absence of said supplied first address in said first storage locations, a virtual space number to said first address, storing said first address and said virtual space number assigned to the first address in said first storage location and outputting said virtual space number;

said first means outputting, upon presence of said supplied first address in said first storage locations, the virtual space number assigned to said first address; and

second means for producing real addresses which correspond to the supplied virtual addresses and the virtual space numbers, said second means including a plurality of second storage locations for storing the real addresses and the virtual space numbers in correspondence thereto,

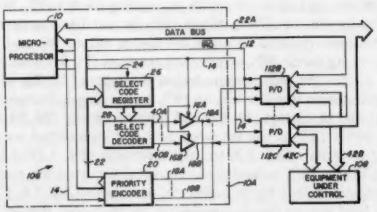
the improvement wherein said first means comprises output means for assigning a predetermined number of the virtual space numbers which predetermined number is larger in number than the number of said first storage locations, said output means including means for producing a signal when a predetermined virtual space number is assigned so as to indicate that the predetermined number of virtual space numbers larger than the number of first storage locations has been assigned and that a new virtual space in excess of the predetermined number of virtual space numbers has been selected, and said second means comprises invalidating means responsive to the signal from said output means for invalidating the content of those second storage locations which hold the virtual space numbers corresponding to a plurality of virtual space numbers in accordance with the virtual space number from said first means.

4,326,249

INTERRUPT SYSTEM AND METHOD

Ernest E. Godsey, Tucson, Ariz., assignor to Burr-Brown Research Corp., Tucson, Ariz.

Division of Ser. No. 890,121, Mar. 27, 1978, Pat. No. 4,181,941.
This application Apr. 6, 1979, Ser. No. 27,903
Int. Cl.³ G06F 3/00
U.S. Cl. 364—200 **2 Claims**



1. A method of operating a control system including a control computer and a plurality of input/output subsystems each including first and second groups of peripheral devices coupling said control computer to input and/or output elements of an equipment system to effect accessing of various ones of said peripheral devices, each of said input/output subsystems including a respective microcomputer and an internal bus having first and second groups of conductors, said method comprising the steps of:

(a) transmitting first and second groups of peripheral address bits from said control computer to said microcomputers in said input/output subsystems;

(b) transmitting said first and second groups of peripheral address bits from said respective microcomputers along first and second groups of conductors, respectively, of said internal buses of each of said input/output subsystems, said second group of peripheral address bits containing information that is different than a first predetermined code;

(c) selecting said second group of peripheral devices in a first one of said input/output subsystems to be accessed by said microcomputer of said first input/output subsystem if said second group of peripheral address bits matches a second predetermined code stored in said first input/output subsystems, said second predetermined code being different from said first predetermined code;

(d) accessing a one of said peripheral devices of said second group in said first input/output subsystem and determined by said first group of peripheral address bits;

(e) transmitting a group of bits containing said first predetermined code from said microcomputer of said first input-

/output subsystem along said second group of conductors of said internal bus of a second input/output subsystem;

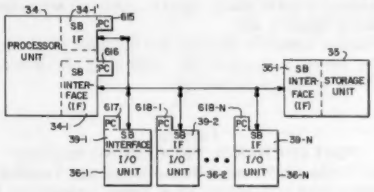
(f) selecting said first group of peripheral devices in said second input/output subsystem in response to said transmitted group of bits containing said first predetermined code; and

(g) accessing a one of said peripheral devices that is determined by any first group of peripheral address bits transmitted by the microcomputer of said second input/output subsystem and that is in said first group of said second input/output subsystem.

4,326,250
DATA PROCESSING APPARATUS WITH SERIAL AND PARALLEL PRIORITY

Robert B. McCullough, Milpitas, Calif., assignor to Magnuson Computer Systems, Inc., San Jose, Calif.

Filed Oct. 10, 1979, Ser. No. 83,239
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **11 Claims**



1. In a data processing system including a plurality of units and including a system bus for interconnecting said units, where each of said units includes means for providing a bus request signal for signalling a request for access to the system bus and includes means responsive to an enabling signal for enabling access to the system bus, priority apparatus for determining priority of access to said system bus by said units, said priority apparatus comprising,

a plurality of priority circuit means, one for each of said units, each one of said priority circuit means connected for controlling the enabling signal of a corresponding one of said units, each one of said priority circuit means including a parallel priority circuit and a serial priority circuit,

parallel priority bus means connected in parallel among said parallel priority circuits for carrying parallel priority signals representing a priority level,

said parallel priority circuit for each one of said priority circuit means including,

means for setting a parallel priority level for said parallel priority circuit,

means for gating said parallel priority level onto said parallel priority bus to generate parallel priority signals when enabled by said bus request signal from an associated one of said units,

means for comparing said parallel priority signals from said parallel priority bus with said parallel priority level to provide a parallel priority enable signal when said parallel priority level is equal to or greater than the parallel priority signals from said parallel priority bus, and when enabled by said bus request signal from an associated one of said units,

means for preselecting the parallel priority level the same for each one of a first group of said priority circuit means,

said serial priority circuit for each of said priority circuit means including,

logic means, connected to receive a serial priority input signal and said bus request signal for providing a serial priority output signal whenever either said serial priority input signal or said bus request signal is active,

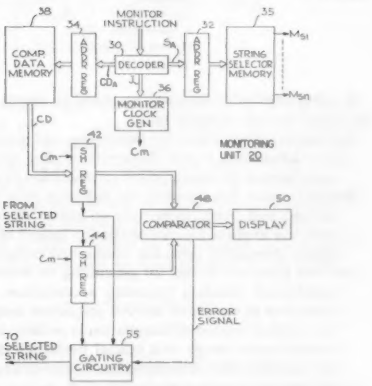
means for connecting each said serial priority circuit within said first group of said priority circuit means in an ordered series with each serial priority output signal connected to provide the serial priority input signal of a next lower-order one of said serial priority circuits, and means for providing a fixed serial priority input signal to the highest order one of said serial priority circuits within said first group,

each of said priority circuit means including means responsive to said parallel priority enable signal being active and said serial priority input signal being inactive to provide said enabling signal to enable access to said system bus.

4,326,251
MONITORING SYSTEM FOR A DIGITAL DATA PROCESSOR

Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,277
Int. Cl.³ G06F *13/06*
U.S. Cl. 364—200 **7 Claims**



1. In a digital data processing system, the combination comprising:

a plurality of storage devices providing for digital storage in said system, each storage device providing for the storage of a plurality of bits which can be inputted or outputted in series or in parallel;

logic circuitry interconnecting said storage devices for the performance of parallel data processing operations by said system;

said logic circuitry also including selectably controllable means for interconnecting said storage devices so as to form a plurality of separately selectable strings, wherein each string comprises at least two serially connected storage devices; and

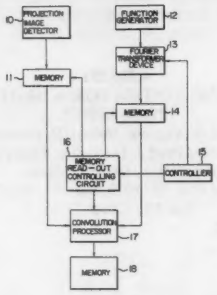
monitoring means for performing monitoring of digital data applied thereto from a selected string;

said monitoring means including means for selectably generating one of a plurality of monitor enable signals and for also selectively generating a predetermined plurality of monitor clock signals which are applied to said selectably controllable means and to the storage devices of a selected string corresponding to the applied monitor enable signal so as to cause the bits stored therein to be serially propagated to and from said monitoring means with the bits of the storage devices of the selected string being returned to states determined by said monitoring means.

4,326,252
METHOD OF RECONSTRUCTING CROSS-SECTION IMAGE

Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa, and Shinji Yamamoto, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 854,672, Nov. 25, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,769
Claims priority, application Japan, Nov. 29, 1976, 51-142256
Int. Cl.[3] G01N *23/00*
U.S. Cl. 364—414 **7 Claims**



1. An apparatus for detecting an object by means of permeable radiation rays, comprising:

irradiation source means for generating said permeable rays to irradiate said object therewith so that said radiation rays transmit through a planar cross-section of said object;

detector means for detecting the radiation rays transmitted through said object to provide an electrical signal corresponding to plural blurred projection images of said cross-section depending upon the transmitted radiation rays;

function generator means for generating an inverse Fourier transformed function including a correction factor for correction of the plural blurred projection images in that the function second differentiation is positive in at least a predetermined range of a spacial frequency domain and has a positive first-differential coefficient at a point where the spacial frequency is equal to zero; and

convolution processor means for receiving said electrical signal from said detector means and said inverse Fourier transformed function from said function generator to perform a convolution integral operation on said electrical signal with said inverse Fourier transformed function used as a weighting function to reconstruct an unblurred three-dimensional image of the planar cross-section of said object.

4,326,253
LIFT CONTROL SYSTEM FOR AIRCRAFT VERTICAL PATH GUIDANCE

Michael G. Cooper, Renton, and Alessandro P. Sassi, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 31, 1980, Ser. No. 136,121
Int. Cl.[3] G06G *7/78*
U.S. Cl. 364—435 **4 Claims**

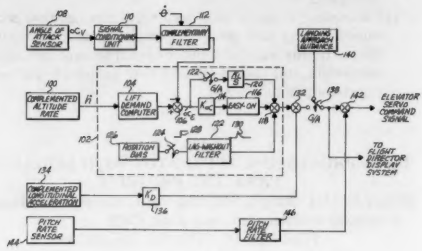
1. An aircraft vertical path guidance system comprising:

means for producing a signal h corresponding to the aircraft's vertical velocity;

lift computer means for producing a reference lift demand angle of attack signal α_{ref}, said α_{ref} signal being a continuously variable function of h between predetermined maximum and minimum angle of attack values, α_{max} and α_{min}, respectively, said function of h being independent of other aircraft parameters;

means for producing a signal α corresponding to the aircraft's actual angle of attack;

error signal means for producing an error signal α_ϵ corresponding to the difference between said reference lift



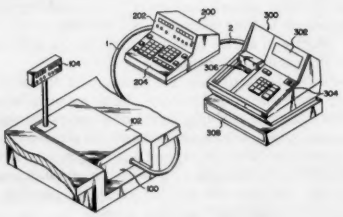
demand angle of attack signal α_{ref} and said actual angle of attack signal α; and

utilization means for utilizing said α_ϵ signal as a control to the aircraft's dynamics for controlling the vertical lift characteristic of the aircraft.

4,326,254
POSTAL CHARGE PROCESSING SYSTEM

Mitsuo Uchimura, Numazu; Masao Oana, and Yoshiharu Nishimura, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,479
Claims priority, application Japan, Mar. 7, 1979, 54-26465; Apr. 24, 1979, 54-50671; Apr. 24, 1979, 54-50672
Int. Cl.[3] G06F *15/20*; G01G *19/413*
U.S. Cl. 364—466 **1 Claim**



1. A postal charge processing system comprising:

weight measuring means for measuring the weight of a postal article and producing weight data representing the weight of said postal article;

first switching means for setting postal conditions at least including the way of mailing and region of mailing destination;

first and second display means;

third display means for displaying weight data from said weight measuring means;

first memory means for storing weight data from said weight measuring means;

second memory means for storing weight data representing the maximum permissible weight of mailable postal article;

third memory means;

second switching means for producing indicated price data which is equivalent to the price for mailing a postal article;

fourth memory means for storing indicated price data produced in accordance with the operation of said second switching means;

a plurality of third switching means for producing special

charge data regarding special charges including at least additional charge and special delivery fee;

fifth memory means for storing special charge data produced in accordance with the operation of said third switching means; and

data processing means for calculating the postal charge based on the weight data from said weight measuring means and postal condition data produced in accordance with the operation of said first switching means and supplying the postal charge data thus obtained to said third memory means for writing therein and also to said first display means for display thereon, said data processing means further including:

means for calculating the overweight data based on the weight data stored in said first memory means and the maximum permissible weight data stored in said second memory means and to supply the overweight data thus obtained to said second display means for display thereon,

means responsive to the operation of said second switching means to inhibit the transfer of data from said first and third memory means to said respective third and first display means and to drive said first and third display means as display mens for displaying indicated price data from said fourth memory means,

means responsive to the operation of said second switching means to calculate price indication charge data corresponding to data produced in accordance with the operation of said second switching means, add the price indication charge data thus obtained to the postal charge data stored in said third memory means and write the result of said addition of the price indication charge data and the postal charge data into said third memory means, and

means responsive to the operation of said third switching means to display in said first display means the special charge data stored in said fifth memory means for a predetermined period of time, and to then clear the display data stored in said fifth memory means, add the charge data produced from said third memory means and one of the special charge data produced with the operation of said third switching means and to supply, when detecting that the contents of said fifth memory means are cleared, the result of said last mentioned addition to said first display means for display thereon in lieu of the charge data stored in said third memory means.

4,326,255

APPARATUS FOR CONTROLLING PLASTICIZING PROCESS OF IN-LINE SCREW-TYPE INJECTION MOLDING MACHINE

Shigeru Fujita, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

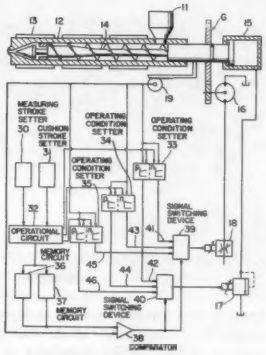
Continuation-in-part of Ser. No. 28,552, Apr. 9, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 231,214

Claims priority, application Japan, Apr. 13, 1978, 53-43575; Apr. 27, 1978, 53-50572; Jun. 19, 1978, 53-73939; Jun. 19, 1978, 53-73940

Int. Cl.³ B29F *1/06*; G06F *7/66*

U.S. Cl. 364—476 **5 Claims**

3. In an apparatus for controlling a plasticizing process of a resin of an in-line screw-type injection molding machine of the type in which the number of revolutions and the back pressure of a screw disposed in a heating cylinder of the injection molding machine are controlled during the resin plasticizing process and comprising hydraulic means for reciprocating and rotating said screw, means for detecting a process variable which represents a position of the screw during the plasticizing process, memory means in which are set programs regarding the number of revolutions and the back pressure of the screw in first and second steps of a resin measuring process, and an operation controller responsive to the output of said detecting means for controlling and determining a control function regarding an operating condition for uniformizing the resin to be injected so as to compensate for the distribution of the temperature of the resin, the improvement which comprises means for setting positions at which a resin filling stroke is divided, means for setting positions at which injection pressures at the divided regions are detected, a first comparator which compares an output signal from said detecting means with that from said means for setting injection pressure detecting position, a memory circuit for memorizing an output signal from said first comparator and an injection pressure at said divided position, an operational circuit which determines a control function



based on an output signal from said memory circuit and generates a signal which is selectively applied to said memory means, a second comparator which compares an output signal from said detecting means with that from said dividing position setting means, and switching means which are operated by an output signal from said second comparator for controlling said hydraulic means in accordance with the predetermined programs stored in said memory means thereby to control the number of revolutions and the back pressure of the screw.

4,326,256

FREQUENCY DISCRIMINATING CIRCUIT

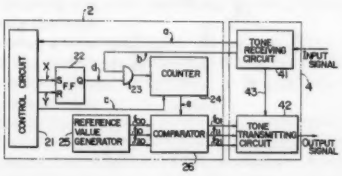
Takayuki Furumoto, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,147

Claims priority, application Japan, Sep. 8, 1978, 53-109822

Int. Cl.³ G01R *23/00*; H04M *1/00*

U.S. Cl. 364—484 **8 Claims**

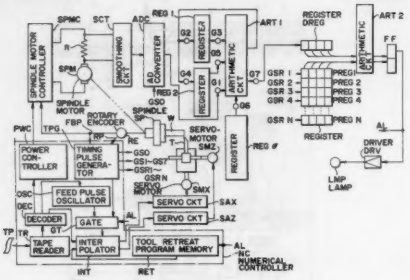


1. A frequency discriminating circuit for determining whether a received input signal has a predetermined frequency wherein the input signal is converted to a digital signal and the digital-converted input signal is gate-controlled for a given period of time by a count enable signal, and further wherein a count value of a counter which counts the number of pulses of the gate-controlled digital input signal is compared in a comparator with respective reference values representing predetermined frequencies generated by a reference value generator to determine if the input signal corresponds to one of said predetermined frequencies.

4,326,257
TOOL BREAKDOWN DETECTING SYSTEM

Toshio Sata, Hoya, and Katsumori Matsushima, Tokyo, both of Japan, assignors to Fujitsu Fanuc Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,512
Claims priority, application Japan, Nov. 21, 1978, 53-143617
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—508 21 Claims



1. A tool breakdown detecting system comprising:

memory means for storing at least one predetermined change pattern of the cutting resistance of a tool corresponding to a tool breakdown condition during working;

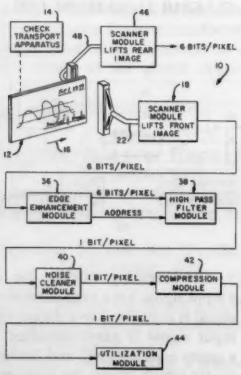
means for detecting the actual cutting resistance of the tool during working and forming a change pattern of the actual cutting resistance of the tool; and

comparing means for comparing the predetermined change pattern stored in the memory means with the actual change pattern of the cutting resistance of the tool during working, wherein coincidence of the two change patterns thus compared indicates a tool breakdown condition.

4,326,258
METHOD AND APPARATUS FOR REDUCING THE GRAY SCALE RESOLUTION OF A DIGITIZED IMAGE

Mario F. de la Guardia, Miami, Fla., assignor to NCR Canada LTD - NCR Canada LTEE, Mississauga, Canada

Filed Jan. 31, 1980, Ser. No. 117,329
Int. Cl.[3] H04N *1/40*
U.S. Cl. 364—515 15 Claims



1. An apparatus for reducing the gray scale resolution of a document comprising:

means for scanning said document along x and y coordinates with regard thereto for generating pixels representing gray scale values for discrete areas of said document along said x and y coordinates; each said pixel having a predetermined number of binary bits;

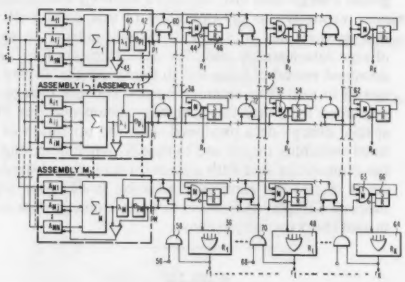
means for summing the associated pixels within a matrix of said pixels along said x and y coordinates, with said matrix being hereinafter referred to as a window to produce a window sum as said window is moved relatively along coordinates corresponding to said x and y coordinates; and

means for comparing a selected pixel within a said window with the associated said window sum and predetermined criteria and for generating first and second outputs in accordance with said comprising; said first and second output values having fewer binary bits than the associated said selected pixel.

4,326,259
SELF ORGANIZING GENERAL PATTERN CLASS SEPARATOR AND IDENTIFIER

Leon N. Cooper; Charles Elbaum, and Douglas L. Reilly, all of Providence, R.I., assignors to Nestor Associates, Stonington, Conn.

Filed Mar. 27, 1980, Ser. No. 134,571
Int. Cl.[3] G06F *15/18*
U.S. Cl. 364—715 28 Claims



1. An information processing system for separating classes of non-linearly as well as linearly separable patterns, each of said patterns being represented by a plurality N of input signals s_1, s_2, . . . s_j . . . s_N, said system comprising, in combination:

(a) a plurality N of input terminals, each terminal (j) adapted to receive one of the N input signals (s_j);

(b) a plurality M of summing means, each summing means (i) having N inputs and an output and being operative to provide a signal (p'_i) at its output representing the sum of the signal representations applied to its inputs;

(c) a plurality N×M of junction elements, each junction element (ij) coupling one of said input terminals (j) with one summing means (i) and providing a transfer of information from the respective input terminal j to the respective summing means i in dependence upon the signal (s_j) appearing at the input terminal and upon the element transfer function A_{ij};

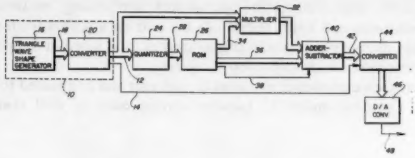
(d) a plurality M of threshold means, each threshold means (i) coupled to the output of one of said summing means (i) and adapted to produce an output (p_i) whenever the output signal (p'_i) produced by the respective summing means exceeds a given threshold value (θ_{pi}),

whereby the output P represented by the respective output signals p_1, P_2 . . . p_i . . . p_M of said threshold means provide a separation of the patterns represented by said input signals s_1, s_2, . . . s_j . . . s_N into classes.

4,326,260
LINEAR PIECEWISE WAVEFORM GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,237
Int. Cl.[3] G06F 1/02
U.S. Cl. 364—718 10 Claims

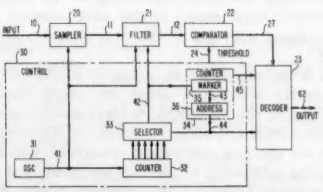


1. A digital waveform generator comprising:
means for developing a binary signal sequentially changing in value at a selected rate;
memory means storing each of a plurality of parameter instructions at a respective memory address, each of said respective memory addresses corresponding to a continuous group of values of said binary signal;
means for addressing each of said respective memory addresses in response to said binary signal assuming a value within the group of values corresponding thereto; and
output means for modifying said binary signal in accordance with said addressed parameter instructions for developing a desired output waveform signal.

4,326,261
SINGLE TONE DETECTOR

John T. Peoples, 20 Dorset Rd., Berkeley Heights, N.J. 07922

Filed Jun. 23, 1980, Ser. No. 162,260
Int. Cl.[3] G01R 23/14
U.S. Cl. 364—724 10 Claims



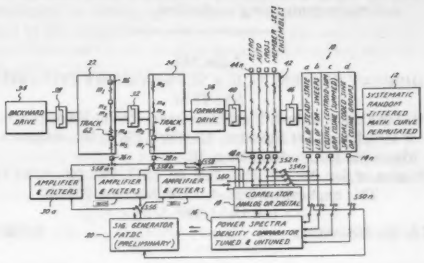
1. Circuitry for detecting and estimating the frequency of a discretized input tone
characterized by
discrete-time means (21,30), including a discrete-time filter (21) having operating states represented by an initial frequency characteristic and expanded frequency characteristics derived from said initial characteristic, for receiving and processing said discretized tone by expanding said filter to operate sequentially in each of said states to produce a corresponding sequence of outputs; and
means (22,23), coupled to said discrete-time means, for identifying said input tone from said sequence of outputs.

4,326,262
UNIVERSAL SIGNAL GENERATOR AND SIGNAL PARAMETER COMPARATOR

Alvin H. Clement, 4924 Greenville, Dallas, Tex. 75206

Filed Oct. 16, 1978, Ser. No. 951,447
Int. Cl.[3] G06G 7/19, 7/26
U.S. Cl. 364—851 24 Claims

19. A method of generating a signal for transmission through the earth having selected, desired characteristics, which comprises providing a library of pre-recorded signals for playback, selecting and playing back one of said signals, varying said

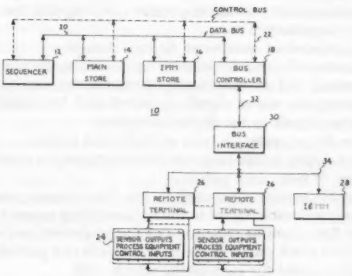


selected signal during playback in a selected manner, and transmitting said varied signal into the earth.

4,326,263
METHOD AND APPARATUS FOR CONTROLLING A PLURALITY OF LIKE EQUIPMENTS

Arthur P. Given, Roanoke, Va., and Michael F. O'Meara, Fos-Sur-Mer, France, assignors to General Electric Company, Salem, Va.

Filed Jul. 3, 1974, Ser. No. 485,571
Int. Cl.[3] G06F 15/46
U.S. Cl. 364—900 9 Claims



1. A method of developing control parameters for a plurality of like equipments through the use of a data processing system having an executive program for directing communications between the equipments and the data processing system and further including a store for the storage of instructions and data comprising the steps:
(A) storing a simulated control circuit appropriate to all of said like equipments by instruction words, each including a portion defining an operation to be performed and an address portion;
(B) storing representations of operating parameters for each of said like equipments in a plurality of designated address locations, like parameters of like equipments being stored in respective locations which differ from each other by an index factor associated with each like equipment;
(C) retrieving the stored instruction words sequentially from said store to perform the operations thereby specified;
(D) combining the address portion of the instruction word retrieved with the index factor associated with the equipment then being controlled to develop a parameter address;
(E) retrieving the representation of the appropriate operating parameter utilizing said parameter address;
(F) performing the operation defined by each retrieved instruction word using the retrieved representation of the

appropriate operating parameter to thereby develop a control parameter for an equipment; and,

(G) repeating the steps of C, D, E and F above for each of said equipments being controlled.

4,326,264

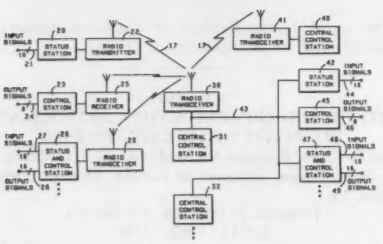
DISPLAY SYSTEM FOR A SUPERVISORY CONTROL SYSTEM

Yitzhak Cohen, Yahud; Yigal Brandman, Ramat Hasharon, both of Israel, and Zvi Eckstien, Highland Park, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 807,850, Jun. 20, 1977, Pat. No. 4,161,718. This application Dec. 4, 1978, Ser. No. 966,288

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **2 Claims**



1. A display system for a supervisory system having a plurality of stations that provide respective status signals, the display system comprising:

a predetermined number of display elements;

a plurality of memory elements connected to the plurality of stations and to the display elements for receiving and storing the status signals in words and transmitting the status signals to the display elements;

means for providing a train of first clock pulses;

first counting means connected to the means for providing a train of first clock pulses;

an enable source connected to the first counting means to apply an enable signal to the first counting means to cause the first counting means to count a predetermined number of first clock pulses in successive words and provide a first output pulse for each of the words; and

second counting means connected to the first counting means, to the enable source, and to the plurality of memory elements, the second counting means responsive to the enable signal for counting a predetermined number of the first output pulses and providing a second output pulse to the plurality of memory elements to direct storage of the status signals in the memory elements.

4,326,265

VARIABLE FUNCTION PROGRAMMED CALCULATOR

Gary W. Boone, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,075, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Jan. 12, 1979, Ser. No. 2,814

Int. Cl.³ G06F *3/02, 3/147, 9/00*

U.S. Cl. 364—900 **5 Claims**

1. An electronic system implemented with a monolithic semiconductor unit included as a part thereof, comprising:

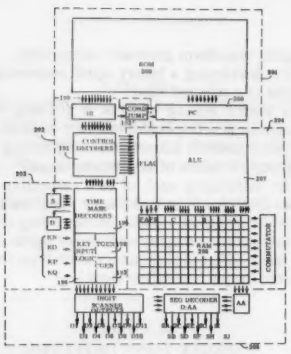
(a) addressable storage means of the read-only-memory type included in said unit for storing fixed program instructions to control the operation of the system, said storage means being programmable in manufacture to define the functions of one of a variety of different systems;

(b) control means included in said unit and including decoder means, the control means being coupled to an output of said addressable storage means and responsive to said program instructions for generating control signals in accordance with said program instructions;

(c) data memory means included in said unit and having a plurality of locations for storing a plurality of multibit data words of coded information in bit-parallel format;

(d) bit-parallel arithmetic-logic means included in said unit and connected to the control means to receive certain ones of said control signals and having an input for receiving data words, said arithmetic-logic means performing bit-parallel arithmetic and logic operations on said data words from said data memory and producing an output, one word at a time, in accordance with said control signals;

(e) selector means included in said unit and connected to the control means to receive certain ones of said control



signals, said selector means coupling selected words from said data memory means to the input of the arithemtic logic means and coupling data words resulting from arithmetic-logic operations appearing at the output of the arithmetic-logic means to the data memory means, in accordance with said certain ones of said control signals; and

(f) the electronic system including, in addition to said semiconductor unit, input means and visual display means external to the monolithic semiconductor unit and coupled to input and output terminals of the semiconductor unit for entering operational commands which result in defining addressing of said storage means and displaying information from the data memory means, both under control of certain ones of said control signals, the input means including manually-operable means.

4,326,266

MONITORING SYSTEM FOR A MODULAR DIGITAL DATA PROCESSOR

Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,278

Int. Cl.³ G06F *11/28*

U.S. Cl. 364—900 **7 Claims**

1. In a digital data processing system having a plurality of separately operating modules, the combination comprising:

a plurality of storage devices in each module, each storage device providing for the storage of a plurality of bits such that bits can be inputed or outputed therefrom in series or in parallel;

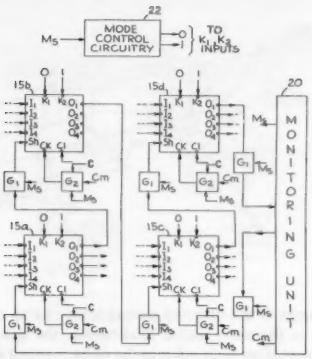
logic circuitry provided in each module for interconnecting said storage devices for the performance of parallel data processing operations;

each logic circuitry also including selectably controllable

means for reconfiguring connections to said storage devices so as to form a plurality of separately selectable strings in each module wherein each string comprises at least two serially connected storage devices; and

monitoring means for performing monitoring of digital data applied thereto from a selected string;

said monitoring means including means for selectably generating one of a plurality of monitor enable signals identifying a particular string in a particular module and for also



selectively generating a predetermined plurality of monitor clock signals, said monitor enable and clock signals being applied to the identified module for causing the selectably controllable means therein to reconfigure connections to the storage devices of the identified string so as to cause the bits stored therein to be serially propagated to and from said monitoring means with the bits of the storage devices of the identified string being returned to states determined by said monitoring means.

4,326,267

DATA PROCESSING SYSTEM EMPLOYING PORTABLE CARDS AND OPERATING STATIONS MAKING USE OF MAGNETIC BUBBLE ELEMENTS

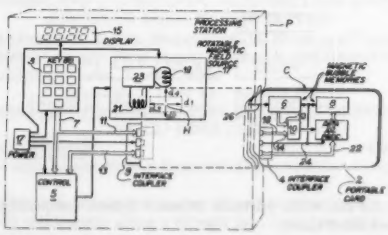
Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

Filed Nov. 1, 1979, Ser. No. 90,275

Claims priority, application France, Dec. 21, 1978, 78 36049

Int. Cl.³ G11C *7/00, 17/08*

U.S. Cl. 365—1 **11 Claims**



1. A data processing system adapted to employ a plurality of portable cards for processing information between said cards and an operating station, each said card including first data processing means, magnetic bubble elements forming a part of said first data processing means, said operating station including second data processing means, receiver means into which said cards may be inserted and means for coupling the first and the second data processing means upon insertion of a card into said receiver means, and said operating station having means positioned for setting up a rotatable magnetic field to be applied to the magnetic bubble elements of the card upon insertion of said card in the receiver means and coupling of the first and second data processing means.

4,326,268

MAGNETIC BUBBLE MEMORY DEVICE

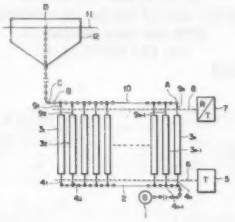
Ryo Suzuki, Kodaira; Keiichi Uehara; Teruaki Takeuchi, both of Kokubunji, and Masatoshi Takeshita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,437

Claims priority, application Japan, Aug. 15, 1979, 54-103137

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—15 **5 Claims**



1. A magnetic bubble memory device comprising a plurality of minor loops, a read-out major line which is disposed at one end of said minor loops through gates having at least a replicating function, and a magnetic bubble detector which includes a detecting line and which is disposed at one end of said read-out major line, said read-out major line having the other end thereof connected through one of the gates to the one of said minor loops positioned furthest away from said magnetic bubble detector, a propagation length from the other end of said read-out major line to said detecting line of said magnetic bubble detector being a bit length which exceeds four times the number of said minor loops.

4,326,269

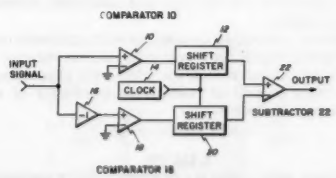
ONE BIT MEMORY FOR BIPOLAR SIGNALS

David N. Ludington, New Hartford, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,756

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **2 Claims**



1. A one bit memory for a plurality of samples of a bipolar input signal comprising:

(a) a first channel having a first comparator means and a first shift register means to quantize the positive portion of said input signal into a single positive level and store them;

(b) a second channel having an inverter, a second comparator means and a second shift register means to invert and quantize the negative portion of the input signal into a single positive level and store them;

(c) means for substracting the output levels of said second

channel from the output levels of said first channel to yield a bipolar output signal having a single quantized positive level corresponding to the positive portion of said input signal and a single quatized negative level corresponding to the negative portion of said input signal whereby the level of said output signal is zero in the absence of said input signal;

(d) a clock to provide timing pulses to said first and second shift register means.

4,326,270

PRESET CIRCUIT FOR INFORMATION STORAGE DEVICES

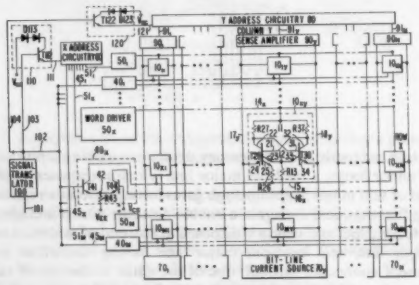
William K. Owens, Sunnyvale, and Steven R. Kabermanes, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Division of Ser. No. 931,637, Aug. 7, 1978. This application Jul. 19, 1979, Ser. No. 58,638

The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—218 **12 Claims**



1. An electronic circuit for information bit storage having a capability for erasing an information bit contained in said circuit and entering a predetermined new information bit into said circuit which comprises:

a memory cell having M transistors (where M is a positive integer) defining at least two distinct states in which said cell may exist, a predetermined state of said distinct states corresponding to said predetermined new information bit and existing when a selected transistor of said M transistors in conducting;

a current-source conductor coupled to said cell for conducting current thereto to sustain said distinct states;

an additional current-conducting region formed as part of said selected transistor, said selected transistor conducting when current flows through said additional current-conducting region;

an additional conductor coupled to said additional current-conducting region for conducting current thereto; and

a branching current switch for selectively channelling current either to said current-source conductor or to said additional conductor.

4,326,271

METHOD AND APPARATUS FOR DETERMINING ACOUSTIC PROPERTIES IN THE EARTH

Antoni M. Ziolkowski, 11 Heatherdene Mansions, Cambridge Rd., Twickenham, Middlesex, England

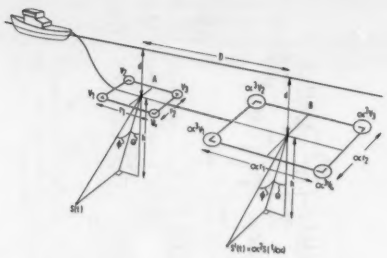
Filed Apr. 23, 1980, Ser. No. 142,925

Claims priority, application United Kingdom, Apr. 23, 1979, 14039/79

Int. Cl.³ G01V *1/13, 1/38*

U.S. Cl. 367—16 **17 Claims**

1. A method of determining the location in the earth of sub-surface boundaries and/or the acoustic properties of sub-surface features in the earth which method comprises employing as a first sound source one or more two-dimensional arrays of point sound sources which point sound sources in a given array are so spaced as to interact with each other, and employing as a second sound source one or more two-dimensional arrays of point sound sources which point sound sources in a given array are so spaced that interaction between the wavefields of two or more of the point sound sources occurs, the or each of the first arrays containing the same number of point sound sources as the or each of the second arrays, respective



point sources of the first and second arrays being of the same type and in the same spatial relationship, the spacing of the point sources from each other in the or each sound array being a factor α greater than that of the point sources from each other in the or each first array, and the energy of the elastic radiation emitted by each point source of the or each second array being greater by a factor α^3 than that emitted by its equivalent point source in the or each first array, wherein α has a value greater than 1.

4,326,272

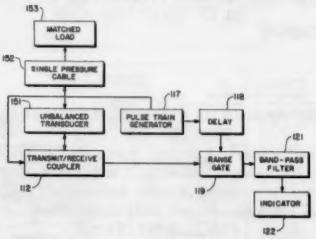
ELECTRONIC INTRUDER DETECTION SYSTEM

Otto E. Rittenbach, Monmouth County, N.J., and Reinhard G. Olesch, Kronberg, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 840,206, Oct. 7, 1977, Pat. No. 4,187,501. This application Dec. 26, 1978, Ser. No. 973,402

Int. Cl.³ G08B *13/16, 13/20*

U.S. Cl. 367—93 **1 Claim**



1. An electronic intrusion detector system comprising:

a fluid-filled cable,

an unbalanced transducer connected to one end of said cable to generate a signal when said cable is disturbed by an intruder,

a matched load connected to the other end of said cable,

a source of pulses,

means applying said pulses to said transducer and receiving a return signal,

range gating means receiving said return signal,

delay means applying delayed pulses from said source to said range gating means, and

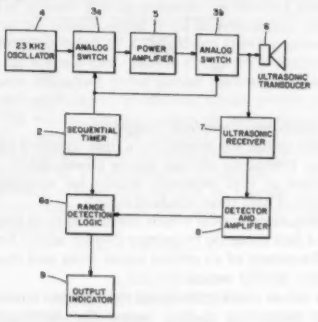
means connected to said range gating means for indicating the location of said intruder.

4,326,273

ULTRASONIC RANGING DEVICE

John Vancha, Bolingbrook, Ill., assignor to Hurst Performance, Inc., Warminster, Pa.

Filed Jul. 23, 1980, Ser. No. 171,529
Int. Cl.³ G01S *15/93, 15/18*
U.S. Cl. 367—112 **6 Claims**



1. An ultrasonic ranging device for use in a vehicle comprising: means for producing a continuous time varying oscillating signal, means for switching said oscillating signal, means for amplifying said time varying signal received from said switch means, second switch means connected to said amplifying means to control said amplified oscillating signal, transducer means connected to said second switch means mounted on an external portion of a vehicle and converting said amplified oscillating signal to a high frequency sound, timer means connected to said first and second switch means to control said switch means, receiver means connected to said transducer means to amplify electrical signals received from said transducer, control means connected to said timer means and said receiver means to selectively supply an output signal to output indicating means in response to a timing signal from said timer means and a receiver signal from said receiver when said return signal is received within predetermined maximum and minimum time intervals corresponding to a predetermined distance between said transducer means and an object reflecting said high frequency sound.

4,326,274

TRANSMISSION SYSTEM OF AERIAL ULTRASONIC PULSE AND ULTRASONIC TRANSMITTER AND RECEIVER USED IN THE SYSTEM

Mitsuhiko Hotta, Kyoto; Shuhei Furuichi, Shiga, and Takanori Shigihara, Hyogo, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jul. 3, 1980, Ser. No. 165,385
Claims priority, application Japan, Jul. 4, 1979, 54/85318
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—118 **4 Claims**

1. A transmission system for aerial ultrasonic pulses comprising:

an ultrasonic transmitter and an ultrasonic receiver in opposing relationship along a straight line, said transmitter and receiver each comprising:

a thickness vibration type piezoelectric element having a front end face portion;

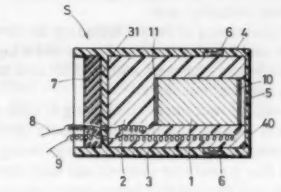
a vibration absorbing material hermetically enclosing said piezoelectric element except said front end face portion;

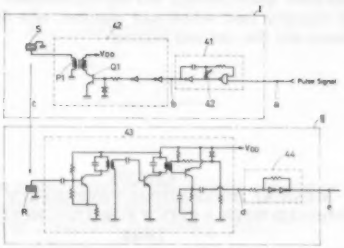
a casing enclosing said vibration absorbing material and having an open end which corresponds with said front end face portion of said piezoelectric element;

a cover closing said open end of said casing, said cover comprising a protective film having excellent sound transmissivity;

a vibration transmitting adhesive layer provided between said protective film and said front end face portion; and

a vibration absorbing adhesive provided between a periphery of said cover and said casing;





said transmitter and receiver being arranged such that said front end face portions of said transmitter and receiver face each other;

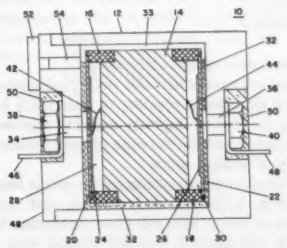
whereby when said transmitter emits an ultrasonic pulse in response to a signal pulse, said receiver receives said ultrasonic pulse and converts said ultrasonic pulse to a voltage corresponding to said signal pulse.

4,326,275

DIRECTIONAL TRANSDUCER

John L. Butler, Marshfield, Mass., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,768
Int. Cl.³ H04B *17/00*
U.S. Cl. 367—160 **10 Claims**



1. A directional transducer, comprising:

a housing having an axis and defining a chamber;

an inertial mass within said chamber;

first and second flexural transducer elements, each comprising a planar member having a periphery, said planar members being mounted by their peripheries on axially oppo-

site ends of said inertial mass substantially perpendicular to said axis thereby defining an air-filled space between said members and said mass;

force transmitting means interconnecting central portions of each of said planar members with said housing along said axis;

means for electrically connecting said transducer elements to external circuitry; and

means for dampening vibration including the air-filled space between said members and said mass and a high viscosity fluid within said chamber, said fluid located between said housing and said members.

10. A directional transducer comprising at least one flexural disc transducer element mechanically, rigidly interconnecting an inertial mass and a housing, said housing having a chamber, said flexural disc transducer element and said inertial mass in said chamber, said flexural disc being connected to said inertial mass by its periphery and to said housing by its center; and means for dampening vibration by a selected amount including an air-filled space between said element and said mass and a high viscosity fluid within said chamber, said fluid located between said disc and said housing.

4,326,276

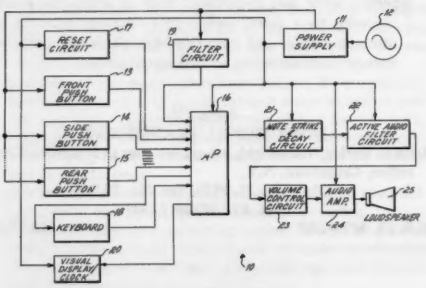
MUSICAL DOOR CHIME PREFERABLY ALSO COMBINED WITH A CLOCK FOR ANNUNCIATING THE TIME

Waller M. Scott, Jr., West Chester, Ohio, assignor to Scovill Inc., Waterbury, Conn.

Filed Dec. 4, 1979, Ser. No. 100,163

Int. Cl.³ G04B *47/00, 21/00;* **G08B** *3/00;* **G10F** *1/00*

U.S. Cl. 368—10 **14 Claims**



1. A musical door chime comprising:

at least one selectively actuable door pushbutton;

a keyboard including a plurality of code entry keys;

a memory for storing digitally encoded representations of the frequency and the duration of each musical note for a plurality of musical tunes;

a tone generation means connected to said at least one door pushbutton, keyboard, and memory and responsive to actuation of said at least one door pushbutton for converting each said digitally encoded musical note representation for one of said musical tunes selected by entering a code by means of said keyboard into a squarewave having said frequency and said duration of each said musical not for said selected musical tune; and

circuit means connected to said tone generation means and responsive to each said squarewave for playing a sound of each said musical note for said selected musical tune.

4,326,277

ELECTRONIC TIMEPIECE

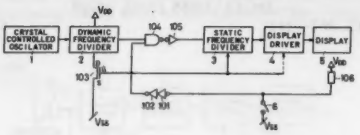
Yasuhiko Nishikubo, Iruma, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1979, Ser. No. 11,853

Claims priority, application Japan, Feb. 17, 1978, 53/17453

Int. Cl.³ G04C *19/00, 9/00;* **H03K** *21/00*

U.S. Cl. 368—86 **4 Claims**



1. An electronic timepiece comprising:

oscillator means for producing a time standard signal;

dynamic frequency divider means connected to an output terminal of said oscillator means for dividing the frequency of said time standard signal;

static frequency divider means connected to an output terminal of said dynamic frequency divider means for dividing the frequency of an output signal from said dynamic frequency divider means;

display driver means connected to an output terminal of said static frequency divider means for driving a display means;

a said display means connected to an output terminal of said display driver means for providing a time information display;

reset system means connected to a reset terminal of said static frequency divider means;

switch means connected to said reset system means and disposed in the voltage supply circuit of said dynamic frequency divider means; and

gate means connected between said dynamic frequency divider means and said static frequency divider means and further connected to said reset system means,

said switch means being open when the reset system means is in the reset state,

said gate means passing the output signal from said dynamic frequency divider means when said reset system means is in the set state and fixing the output thereof when said reset system means is in the reset state.

4,326,278

ELECTRONIC TIMEPIECE

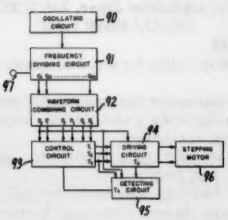
Masaharu Shida; Makoto Ueda; Akira Torisawa; Shuji Owada, and Masaaki Mandai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 4, 1978, Ser. No. 966,115

Claims priority, application Japan, Dec. 2, 1977, 52-144651

Int. Cl.³ G04B *19/00;* **G04F** *5/00*

U.S. Cl. 368—157 **12 Claims**



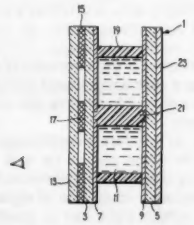
1. In an electronic timepiece having an oscillating circuit for generating a time standard signal; a dividing circuit for divid-

ing the time standard signal into a plurality of lower frequency signals; a stepping motor including a stator, rotor and coil; and a driving circuit for applying driving pulses to the stepping motor coil to effect rotation of the rotor, the improvement comprising: a pulse combining circuit receptive of the lower frequency signals from the dividing circuit for producing correction driving pulses having sufficient effective power to drive the motor under worst case conditions; detecting means for detecting the rotation or non-rotation condition of the rotor and developing a corresponding output signal upon detection of a non-rotation condition; and control means coacting with said pulse combining circuit for producing and controlling the application of normal driving pulses to the driving circuit and responsive to the output signal from said detecting means for effecting the application of a correction driving pulse to the driving circuit when a non-rotation condition is detected, said control means including pulse power minimizing means for producing and applying to the driving circuit within predetermined periods normal driving pulses of decreasing effective power and for producing and applying to the driving circuit normal driving pulses of increasing effective power in response to the detection of a non-rotation condition of the rotor thereby reducing overall the amount of electric power required to rotationally drive the stepping motor during operation of the timepiece.

4,326,279
ANALOGUE DISPLAYS

Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Jan. 25, 1980, Ser. No. 115,535
Claims priority, application United Kingdom, Jan. 26, 1979, 02941/79
Int. Cl.³ G04C *17/02*; G06F *3/14*
U.S. Cl. 368—240 **21 Claims**



1. An analogue display including:

a display panel having an electrically sensitive medium interposed between a first and a second set of electrodes, each set mounted upon a supporting substrate, at least one of which substrates is transparent, the medium being capable of adopting in different regions thereof each of two optical states, an ON state and an OFF state respectively, according to voltage differences applied thereacross when address signals are applied to the electrodes, the two sets of eletrodes being arranged in register with each other and each configured to define by overlap thereof both a plurality of selectable positions of a shaped index character and background areas adjacent these selectable positions;

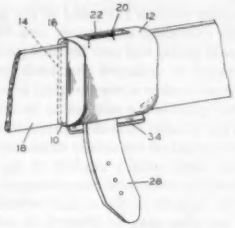
panel drive means for providing a set of address signals; and,

signal selection means having signal inputs connected to the panel drive means to receive address signals, and having at least one control input, the selection means being connected to at least one of the two sets of electrodes; the other set of electrodes being connected to receive address signals wherein, under control, the selection means is capable of channelling selected address signals to its connected electrodes, such that while address signals are applied to both sets of electrodes, like signals are applied to overlapping electrodes defining a selected one of the selectable positions, zero voltage difference being applied across the region of the medium interposed therebetween, this region being held in the OFF state, where simultaneously other regions of the medium, corresponding both to other selectable positions of the index character and to background areas, are held in the ON state.

4,326,280
WATCH MOUNTING DEVICE

Dale E. Perry, Jr., 4352 Brown Rd., Oregon, Ohio 43616

Filed Mar. 24, 1980, Ser. No. 133,454
Int. Cl.³ G04B *37/00*; A45C *11/10*
U.S. Cl. 368—277 **6 Claims**



1. A watch mounting device adapted to be mounted on an article of wearing apparel, comprising:

a. a base plate mounted on the wearing apparel;

b. a watch carrying cover;

c. first hinge means pivotally connecting one end of said cover along one marginal edge of said base plate;

d. first spring means normally urging said cover against said base plate;

e. a watch;

f. second hinge means pivotally connecting one end of said watch to the opposite end of said cover;

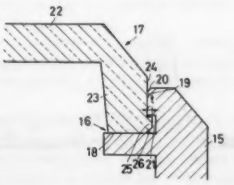
g. second spring means normally urging said watch to a position within said cover; and

h. grasping means attached to the opposite end of said watch and extending from within and beyond said cover.

4,326,281
MOUNTING STRUCTURE OF PLASTIC GLASS IN WATCH CASE

Ryuzo Tanaka, Tanashi, and Hisao Ishigaki, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 951,016, Oct. 12, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,885
Claims priority, application Japan, Oct. 13, 1977, 52-137120[U]; Dec. 15, 1977, 52-168668[U]
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—294 **8 Claims**



1. A mounting structure for mounting a plastic glass to a watch case comprising:

a recess provided on an upper portion of said watch case for receiving said plastic glass;

said recess comprising an entrance edge, an axially extending glass-fitting portion adjacent said entrance edge, and a radially extending glass-receiving portion;

an engaging groove provided adjacent the extreme end of said glass-fitting portion;

a beveled guiding portion provided in said entrance edge;

said plastic glass comprising a central portion, an axially extending portion, a fitting portion provided on the outer periphery of said axially extending portion, so as to be abutted on the entire surface of said axially extending glass-fitting portion of said recess;

an annular extending projection provided on said outer periphery and adapted to engage with said engaging groove; and

a beveled guiding portion provided in the leading edge of said annular extending projection, said beveled guiding portion of said recess and said beveled guiding portion of said glass being so arranged that both guiding portions engage with each other when the glass is put on the watch case, and said glass being adapted to be inserted into said recess with the annular extending projection sliding on the guiding portion and on the axially extending portion of the recess by the force axially applied to the glass and the annular extending projection being adapted to engage said groove at the bottom of the recess, whereby said fitting portion of the glass may be abutted on substantially the entire surface of said axially extending glass-fitting portion.

4,326,282

APPARATUS FOR REPRODUCING DIGITALLY CODED INFORMATION RECORDED ON AN OPTICALLY READABLE DISC-SHAPED RECORD CARRIER

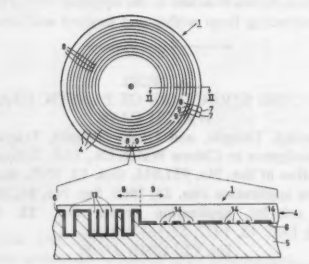
Johannes J. Verboom, and Marino G. Carasso, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

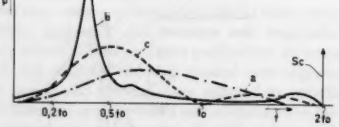
Filed Mar. 24, 1980, Ser. No. 132,743

Claims priority, application Netherlands, Jan. 9, 1980, 8000124

Int. Cl.³ G11C *13/04*; G11B *25/04, 27/30*

U.S. Cl. 369—48 **1 Claim**





1. An apparatus for reproducing a digitally coded signal recorded on a disc-shaped record carrier in the form of optically detectable, unit information areas arranged in a concentric or spiral track pattern, said apparatus comprising means for producing a light beam, an optical system for protecting the light beam onto the track pattern, a detector for detecting the presence of a unit area in said beam, a read circuit for reproducing the recorded digitally coded signal, and a clock-signal generation device for synchronizing the read circuit, said clock-signal generation device including a band-pass filter, having a center frequency which is substantially equal to twice the bit frequency of the recorded signal, for filtering the signal detected by the detector in order to obtain a clock signal, said bit frequency f complying with $f = V/2L$, where V is the nominal tangential speed of the record carrier at the location of reading and L the nominal minimum center-to-center distance of the unit areas at the location of reading.

4,326,283

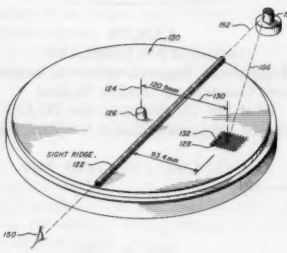
CARTRIDGE ALIGNMENT SYSTEM

Roy D. Toulan, Jr., Beverly Farms, and Richard Rensky, Burlington, both of Mass., assignors to Quality Audio Components, Inc., Woburn, Mass.

Filed Sep. 2, 1980, Ser. No. 183,180

Int. Cl.³ G11B *3/06*; G01B *5/24*

U.S. Cl. 369—55 **14 Claims**



1. Apparatus for assisting in the alignment of a shaft mounted stylus tip mounted to a tone arm pivoted about a vertical axis so as to track across a record located on the central spindle of a turntable comprising:

a member having an aperture therethrough adapted to fit over said spindle when placed on said turntable, said member including means fixedly positioned on one surface thereof for providing a visual line of sight to the pivot of said tone arm, which sight line is parallel to said one surface and generally perpendicular to said vertical axis, said fixedly positioned means being oriented in a predetermined direction and located at a first predetermined distance from the center of said aperture;

a mark on said one surface a second predetermined distance from the center of said aperture; and,

a grid surrounding said mark having at least one line perpendicular to a line between the center of said aperture and said mark, said first predetermined distance minus said second predetermined distance being such that when said stylus tip is placed on said mark and said shaft is aligned with said perpendicular line, said stylus tip is oriented at a point of minimum positional error.

4,326,284

VIDEO DISC PLAYER HAVING TURNTABLE ASSIST APPARATUS

Charles A. Elliott, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

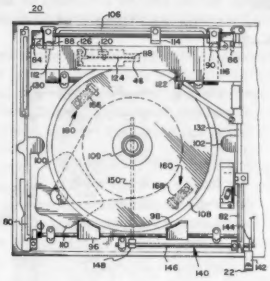
Filed May 9, 1980, Ser. No. 148,304

Int. Cl.³ G11B *17/00*

U.S. Cl. 369—77 **2 Claims**

1. In a record player for recovering prerecorded information from a disc record; said player includng a turntable for rotatably supporting and centering said record for playback; said

player having means for raising and lowering said turntable including a support member; apparatus comprising spring-loaded means subject to engagement with said turntable during translation of said turntable from a raised position to a lowered position for reducing the force exerted by said turntable on said support member; wherein said spring-loaded means comprises a spring-loaded member disposed underneath said turntable;



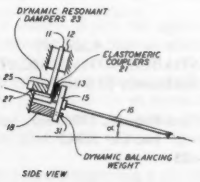
said spring-loaded member being located such that it does not engage said turntable when said turntable is occupying said raised position to allow said turntable to rotate without hindrance from said spring-loaded member; a pad being disposed on said spring-loaded member for engagement with the underside of said turntable during said translation of said turntable from said raised position to said lowered position to effect deceleration of said turntable.

4,326,285

STEREO PHONOGRAPH CARTRIDGE

Norman H. Dieter, Jr., Pleasantville, and Edward Peterhoff, Nanuet, both of N.Y., assignors to Micro-Acoustics Corporation, Elmsford, N.Y.

Filed Apr. 1, 1980, Ser. No. 136,320
Int. Cl.³ H04R *17/08*
U.S. Cl. 369—137 **6 Claims**



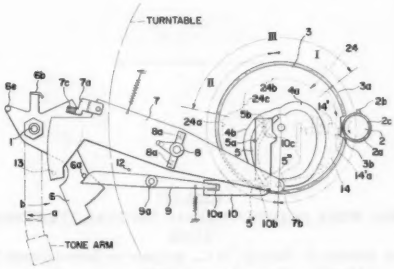
1. In a stereo phonograph cartridge comprising:
a. a base;
b. first and second piezoelectric transducers;
c. first and second individual elastomeric means mounting said first and second transducers to said base depending downwardly in a cantilevered manner in horizontal spaced relationship;
d. first and second separate elastomeric stabilizers mounted to said base in horizontal spaced relationship with each other and directly below said first and second transducers;
e. a resolver having four connecting points coupled respectively to said first and second transducers and said first and second stabilizers;
f. a pivot anchor, stressed in tension, extending between said resolver and said base, said pivot anchor being attached to said resolver at a point which is equidistant from each of said four connecting points; and
g. a stylus bar extending from said resolver along the axis of said pivot anchor, the improvement comprising:
h. elastomeric coupling pads disposed between each of said transducers and their associated connecting points; and
i. an elastomeric bar attached to each of said transducers on the side opposite said coupling point, said elastomeric bar having one end attached to its associated transducer and a weight on the other end of said elastomeric bar.

4,326,286

AUTOMATIC RECORDER PLAYER

Mamoru Shimoi, Tenri, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 31, 1980, Ser. No. 135,468
Claims priority, application Japan, Apr. 5, 1979, 54-41755; May 18, 1979, 54-61882
Int. Cl.³ G11B *17/06*
U.S. Cl. 369—226 **8 Claims**



1. In combination with an automatic record player including a turntable, a turntable spindle having a turntable gear, a tone arm supported for pivotal movement between a rest position and an operative position, and a drive motor for rotating the turntable in one direction, apparatus comprising:
a gear wheel having a generally heart-shaped cam groove and a bypass groove bypassing a bypassed portion of the heart-shaped cam groove, said gear wheel being engageable with the turntable gear to be rotated thereby;
a pivotable tone arm swinging member connected to the tone arm;
a generally elongated drive transmitting member supported to pivot in
(a) a plane parallel to the plane of rotation of the gear wheel between first and second positions, and
(b) a plane perpendicular to the plane of rotation of the gear wheel between lifting and lowering positions,
said drive transmitting member
(c) having one end which carries a follower pin that is engaged in the heart-shaped cam groove or in the bypass groove,
(d) having another end that is engageable with the swinging member, and
(e) oscillating from the first position to the second position and then back to the first position during one complete rotation of the gear wheel;
a tripping member operatively coupled to the gear wheel to engage the gear wheel with the turntable gear;
a switching lever carried by the gear wheel and pivoting between
(a) a first position in which the switching lever guides the follower pin away from the bypassed portion of the heart-shaped cam groove into the bypass groove, and
(b) a second position in which the switching lever allows the follower pin to continue to move into said bypassed portion,
the switching lever cooperating with the drive transmitting member in a manner that
(c) when the switching lever is held in the first position

and the follower pin is in the bypass groove during rotation of the gear wheel, the drive transmitting member is pivoted from the lifting position to the lowering position with said another end thereof being disengaged from the swinging member, and

(d) when the switching lever is held in the second position and the follower pin is in the bypassed portion of the heart-shaped cam groove during rotation of the gear wheel, the drive transmitting member remains in the lifting position while the swinging member pivots; and

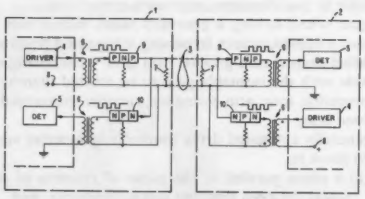
a linkage means for cooperating with the swinging member to bring the switching lever into the second position when and for so long as the tone arm is held in the rest position and to bring the switching lever into the first position when the tone arm is moved from the rest position towards the operative position.

4,326,287

TWO WIRE BI-DIRECTIONAL DIGITAL TELEPHONE LINK

Paul Abramson, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,452
Int. Cl.³ H04L *5/14*
U.S. Cl. 370—29 **6 Claims**



1. A bi-directional communications system for simultaneous communication over a two-wire link comprising:

at least a first station and a second station, said stations each comprising a transmitter and a receiver connected to said two-wire link;

said transmitter at said first station being capable of producing pulses of a first polarity for application to said link;

said receiver at said first station being responsive to pulses of the opposite polarity to those transmitted by said transmitter at said first station;

said second station having a receiver responsive to pulses of the polarity transmitted by said transmitter at said first station and having a transmitter for producing pulses of the opposite polarity thereto for application to said link;

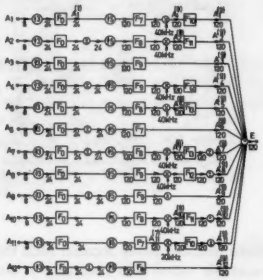
said transmitters at said first and second stations being synchronized with respect to the receipt of pulses of the polarity to which the respective receivers are responsive for applying outgoing pulses to said link at a position within the baud defined by a given transmission rate such that said pulses when delayed by the propagation delay of said link will not arrive coincident with the generation of the pulses at the opposite ends of said link.

4,326,288

METHOD AND APPARATUS FOR FREQUENCY DIVISION MULTIPLEX SYSTEM

Alfred Fettweis, Bochum, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,472
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840256
Int. Cl.³ H04J *1/05*
U.S. Cl. 370—70 **20 Claims**



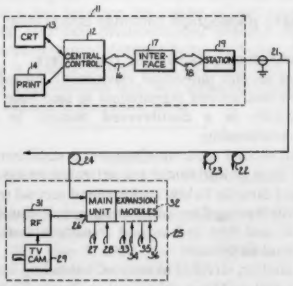
1. A method for digital conversion of signals into signals of a frequency-division multiplex system, comprising the steps of limiting the band width of signals to be converted to a specific band width, and selecting a basic operating rate for generating samples of said signals having a frequency equal to six times said specific band width, selecting further operating rates which are entire multiples of said basic operating rate, forming a 12-channel group given a channel width of 4 kHz and a basic PCM sampling rate of 8 kHz, the operating rate for 12 channels is increased by the factor 3 to 24 kHz, traversing an identical filter, inverting each second scanning sample in its operational sign for some channels, increasing the operating rate for all channels by the factor 5 to 120 kHz and combining the individual channels into a 12-channel group after passing through modulators and filters at an operating rate of 120 kHz.

4,326,289

EXPANDABLE COMMUNICATION SYSTEM

Robert V. C. Dickinson, 32 Debbie Pl., Berkeley Heights, N.J. 07922

Filed Feb. 28, 1980, Ser. No. 125,440
Int. Cl.³ H04J *3/08, 3/02*
U.S. Cl. 370—85 **11 Claims**



1. An expandable communication system comprising:

a. a signal-carrying medium comprising a plurality of termi-

nals at which signals can be entered into and extracted from the signal-carrying medium;

b. a control center comprising:

(1) control center transmitter means to generate at least a first carrier, the transmitter means being connected to a first one of the terminals to supply the first carrier to the medium to be conveyed away from the control center in a downstream direction,

(2) control center receiver means connected to the first terminal to receive a second carrier conveyed by the medium in an upstream direction toward the first terminal,

(3) control signal generating means to generate digital bit signals grouped into bytes, each byte including a fixed number of the bit signals, successive groups of the bytes comprising station-related signals, each group of station-related signals comprising: an initiation byte, a control byte to define certain contents of other bytes in the same group, and an address signal including at least one address byte, at least some of the station-related signals also comprising response-request signals and downstream data byte signals, the number of such downstream data bytes in a given group of station-related signals being based on the amount of data to be conveyed at that time to any station addressed by that group of station-related signals, the control signal generating means comprising incrementing circuit means to change the address signal in successive station-related signals to generate the station-related signals as polling signals to poll, in repetitive polling cycles, a group of system stations; and

c. a plurality of system stations, each connected to a respective one of the terminals downstream from the first terminal and each comprising:

(1) station receiver means to receive at least the first carrier traveling downstream along the signal-carrying medium from the control center,

(2) controlled circuit means connected to the station receiver means:

(i) to respond to the initiation byte and the control byte of each group of station-related signals and to the address signal of those station-related signals that include the address signal of that specific station, the controlled circuit means of each of the stations being capable of responding to different numbers of data bytes than other stations polled in the same polling cycle, and

(ii) to generate station digital bit signals grouped in station bytes comprising at least an address signal and a control byte signal,

(3) address circuit means connected to the station receiver means and to the controlled circuit means to control the respective system station to respond only to station-related signals including the address signal of that system station,

(4) output circuit means comprising a plurality of output terminals, the output circuit means being connected to the controlled circuit means to be controlled by signals therefrom to provide controlled output signals determined by the data signal in the respective station-related signal,

(5) input circuit means comprising a plurality of input terminals to receive signals originating at the respective system station, the input circuit means being connected to the controlled circuit means to be controlled by signals therefrom,

(6) station transmitter means to generate station signals to be carried upstream by the signal-carrying medium, such signals including at least the second carrier modified by the station digital signals, the transmitter means being connected to the input terminals to be controlled in part by the signals applied to the input terminals and being connected to the controlled circuit means to be controlled in part thereby to modify the second carrier according to selected station digital signals and to apply the station signals to the signal-carrying medium at least partly in response to the station-related signals, and

(7) expansion terminal means connected to the address circuit means to receive expansion address signals therefrom and connected to the controlled circuit means to receive expansion circuit control signals and expansion circuit data signals therefrom and to transmit expansion circuit data signals thereto.

4,326,290

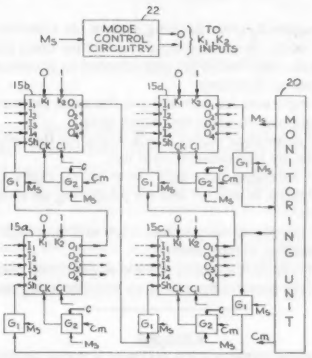
MEANS AND METHODS FOR MONITORING THE STORAGE STATES OF A MEMORY AND OTHER STORAGE DEVICES IN A DIGITAL DATA PROCESSOR

Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,200

Int. Cl.[3] **G06F** *11/00;* **G11C** *29/00*

U.S. Cl. 371—21 **11 Claims**



1. In a digital data processing system, the combination comprising:

a selectively addressable memory;

addressing means for said memory;

a memory output register comprising a plurality of multiple bit storage devices;

said memory being operative to read out selected storage states at locations selectd by said addressing means into said memory output register;

a plurality of multiple bit storage devices in addition to those comprising said memory output register; and

logic circuitry interconnecting said storage devices including those comprising said memory output register for the performance of data processing operations by said system;

said logic circuitry including gating means for interconnecting said storage devices including those comprising said memory output register into a plurality of separately selectable strings; and

monitoring means for performing monitoring of digital data applied thereto from a selected string;

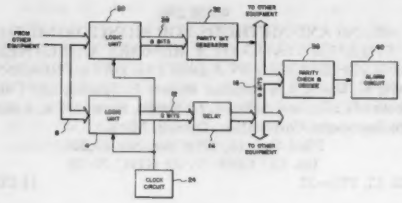
said monitoring means including means providing a memory address for said addressing means for use in reading out selected memory states into said memory output register;

said monitoring means also including means for selectably generating one of a plurality of monitor enable signals along with a predetermined plurality of monitor clock signals which are applied to said gating means and to the storage devices of a selected string corresponding to the applied monitor enable signal so as to cause the states thereof to be propagated to and from said monitoring means with the storage devices of the selected string being returned to (their original) states determined by said monitoring means.

4,326,291
ERROR DETECTION SYSTEM

Phillip W. Marsh, Granger, and Gregory B. Wiedenman, Sandy, both of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,074
Int. Cl.³ G06F *11/10, 11/16*
U.S. Cl. 371—68 **8 Claims**



1. A throughput error checking system for checking errors which may occur in processing or operating upon data by a first logic unit, said first logic unit adapted to produce output data, said system including

a second logic unit for operating in the same manner as said first logic unit to produce output data,

means for generating parity check digits for the output data produced by said second logic unit,

means for decoding data and parity check digits to determine if parity is correct and for producing an error signal if it is not,

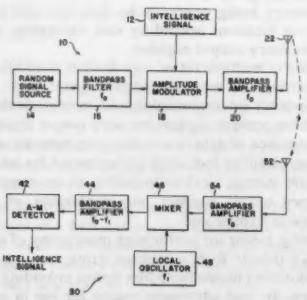
means for supplying output data from said first logic unit to said decoding means, and

means for supplying parity check digits from said parity check digit generating means to said decoding means.

4,326,292
RANDOM ENERGY COMMUNICATION SYSTEM

James J. Spilker, Jr., Palo Alto, and William R. Ramsay, Mountain View, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1960, Ser. No. 16,097
Int. Cl.³ H04K *1/00*
U.S. Cl. 455—27 **5 Claims**

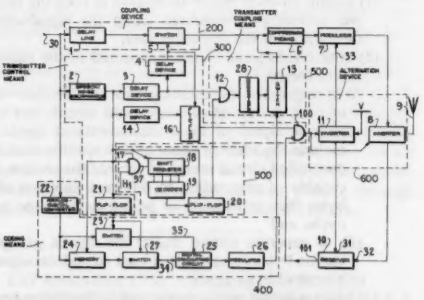


5. An intelligence communication system comprising a transmitter and a receiver; said transmitter comprising means for obtaining a relatively wide band random energy carrier signal, means for modulating said random carrier signal with an intelligence signal thereby forming a message signal, means responsive to said wide band energy obtaining means for deriving a reference signal which differs in frequency with said message signal by a definite fixed amount and means for radiating to the receiver both the message and reference random signals; said receiver comprising an antenna for picking up both the message and reference random signal simultaneously, means for operating on at least one of said message and reference random signals to obtain message and reference random signals which are recombined and mixer means for multiplying the recombined message and reference random signals to obtain a resultant signal from which the intelligence signal can be derived.

4,326,293
TRANSMITTER-RECEIVER WITH AUTOMATIC ALTERNATION CONTROL

Pierre DeMan; Alberto Pimentel; Jean-Claude Ben Sadou, and Charles de Riviere, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 9, 1980, Ser. No. 138,509
Claims priority, application France, Apr. 13, 1979, 79 09491
Int. Cl.³ H04B *1/64, 1/46*
U.S. Cl. 455—72 **14 Claims**



10. In a communication system having a plurality of communication devices, each device including a transmitter and a receiver, wherein a transmitter of a first such communication device transmits an amplitude compressed speech signal, any amplitude variations of which are suppressed or completely eliminated, and wherein a receiver of a second such communication device reproduces the speech signal, the improvement comprising:

means, with the transmitter of said first communication device, for determining the mean value of amplitude of a speech signal over a voice activity period transmitted thereby; coding means for generating a coded signal representing the mean value; and means for modulating the coded signals as a preamble to the speech signal of the voice activity period transmitted thereby; and

means, within the receiver of said second communication device, for decoding the preamble and speech signal transmitted by the transmitter of said first communication device, and controlling the amplitude of the speech signal reproduced so as to accurately obtain speech corresponding in amplitude to the mean value of the speech signal as transmitted.

4,326,294

SPACE DIVERSITY RECEPTION SYSTEM HAVING COMPENSATION MEANS OF MULTIPATH EFFECT

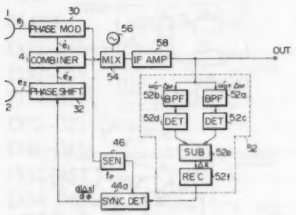
Yoshiharu Okamoto, Yokosuka; Izumi Horikawa, Yokohama, and Shozo Komaki, Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,591

Claims priority, application Japan, Feb. 13, 1979, 54-14359; Mar. 28, 1979, 54-35643; Apr. 4, 1979, 54-39743; Nov. 19, 1979, 54-148867

Int. Cl.[3] H04B *7/08*

U.S. Cl. 455—139 12 Claims



10. A space diversity reception system comprising a pair of spaced antennas, a phase shifter means connected to a first one of said antennas for shifting the phase of a signal received by said first antenna, a combiner connected to the output of said phase shifter means, phase modulating means including a sensing coupled to a second one of said antennas oscillator for phase modulating a signal received by said second antenna, said combiner also coupled to the output of said phase modulating means and control means for the control of said phase shifter means wherein said control means comprises a plurality of level detectors connected to the output of said combiner for providing levels at a plurality of frequency points in a reception pass-band, and a control circuit for controlling said phase shifter means according to the output of said level detectors and wherein said control means controls said phase shifter means so that the phase of an interference wave received by said first antenna is opposite at the input of said combiner to that received by said second antenna, and interference waves of said antennas are cancelled by each other.

4,326,295

TELEVISION TUNER CIRCUIT

Tomomi Matsumoto, Yokohama; Kiyoshi Amemiya, Takayama, and Yukitomi Kanai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1979, Ser. No. 41,893

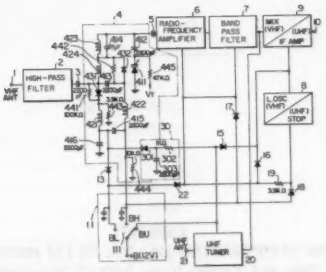
Claims priority, application Japan, May 29, 1978, 53-63333

Int. Cl.[3] H04N *5/44;* H04B *1/16*

U.S. Cl. 455—188 8 Claims

1. In a television tuner comprising a VHF tuner section, a UHF tuner section and a power supply device connected to said VHF and UHF tuner sections for selectively supplying the same with a single-polarity DC power as a power supply for VHF low band, VHF high band and UHF band, said VHF tuner section including an input tuning circuit which in turn includes band-switching diodes for switching a low-band tuning element and a high-band tuning element for determining the tuning band of said input tuning circuit, said diodes being subjected to on-off switching by said power supply for VHF low-band and VHF high band of said power supply device, thereby switching said input tuning circuit between two tuned modes of VHF low band and VHF high band;

a television tuner circuit including circuit means for connecting said power supply device to said band-switching diodes of said input tuning circuit of said VHF tuner section, said power supply being introduced to said diodes when the UHF band power is selectively supplied to said UHF tuner section from said power supply device, said power supply device including a VHF low-band and VHF high-band power supply terminal connected to said VHF tuner section and a UHF band power supply terminal connected to said UHF tuner section, said circuit means including a first bias circuit for connecting said UHF band power supply terminal to a mixer/intermediate frequency amplifier common to said VHF and UHF tuner



sections and a second bias circuit for connecting said mixer/intermediate frequency amplifier in DC fashion to said band-switching diodes of said input tuning circuit of said VHF tuner section, said second bias circuit introducing the DC voltage generated in said mixer/intermediate frequency amplifier to said diodes when said single-polarity DC power is supplied to said UHF band power supply terminal during the receipt of UHF band, thereby biasing said diodes.

4,326,296

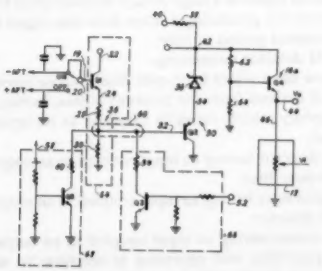
TUNING SYSTEM FOR A COLOR TELEVISION RECEIVER HAVING A VARACTOR TUNER

Patrick M. Rafter, and James E. Hitchcock, both of Knoxville, Tenn., assignors to Magnavox Consumer Electronics Co., New York, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,723

Int. Cl.[3] H04B *1/16, 1/26;* H04N *5/50*

U.S. Cl. 455—192 9 Claims



1. An improved tuning system for a color television receiver embodying a varactor tuner having a controller means and an automatic fine tuning system said controller means including a resistive element with switch selected taps for selecting the desired channel and switch means, comprising:

a low impedance tuning voltage supply serially connected at its output with said controller means, said voltage supply applying a preselected regulated source voltage to said controller means whereby said supply voltage is substantially independent of changes in the resistive value of said controller means, and

automatic fine tuning interface serially connected between said automatic fine tuning system and said varactor tuner, said automatic fine tuning interface applying correction voltage to said varactor tuner.

4,326,297

NOISE SUPPRESSING DEVICE IN FM RECEIVER

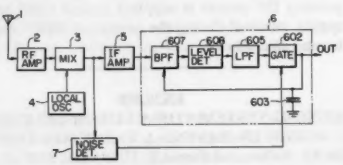
Reisuke Sato, and Yoshiro Sugai, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,095

Claims priority, application Japan, Apr. 28, 1979, 54-52906; Apr. 28, 1979, 54-52907

Int. Cl.³ H04B 1/10

U.S. Cl. 455—213 **2 Claims**



1. A noise eliminating device in an FM receiver comprising:

an FM detector;

noise detecting means for detecting a noise component in a received signal at a stage of said receiver prior to said FM detector for producing a noise detection signal for a predetermined period of time;

said FM detector comprising:

a narrow band width band-pass filter, whose input is an IF signal derived from the received signal, having a center frequency which varies in response to an input control signal;

a level detector having an input coupled to an output of said band-pass filter;

a low-pass filter having an input coupled to an output of said level detector;

gating means having an input coupled to an output of said low-pass filter and operating in response to said noise detection signal, and an output; said input control signal being produced on the output of said gating means and

a holding capacitor coupled to said output of said gating means to hold said input control signal.

4,326,298

ARRANGEMENT FOR SIGNALING IN A VOICE COMMUNICATION SYSTEM WITH OPTICALLY FED COMPONENTS

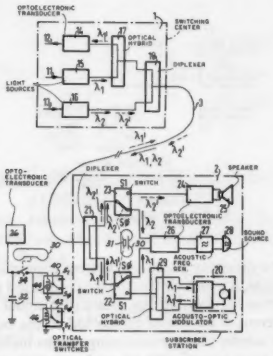
Ingrid Fromm, and Helmut Lagger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,448

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935838

Int. Cl.³ H04B 9/00

U.S. Cl. 455—606 **12 Claims**



1. In a voice communication system of the type in which a switching center is connected to a plurality of subscriber stations via light wave guides for carrying modulated and unmodulated light signals for completing and disconnecting calls, for energy supply of the subscriber stations by way of unmodulated light of a frequency different from the light transmitted for other purposes, the improvement therein comprising:

light generating means including interrogation means in the switching center for transmitting short light pulses to the subscriber stations;

a subscriber station diplexer;

first and second optical transfer switches connected to said diplexer for receiving respective light frequencies and each having an idle position and a working position;

handset means coupled to operate said optical transfer switches to said positions corresponding to on-hook and off-hook conditions; a call signal device; and

an optoelectronic transducer connected between said idle positions of said optical transfer switches and said call signal device, said optoelectronic transducer operable to absorb short light pulses in the idle condition;

acousto optical modulator means connected to said working position of said first optical transfer switch operable in the off-hook condition to partially reflect short light pulses back toward the switching center; and

dialing means for transmitting light dialing pulses to said switching center for establishing connections;

the short light pulses dimensioned with respect to pulse length and pulse-to-pause ratio such that the optoelectronic transducer cannot respond to operate said call signal device and such that a noticeable delay in completing outgoing connections does not occur.

DESIGN PATENTS

GRANTED APR. 20, 1982

ERRATA

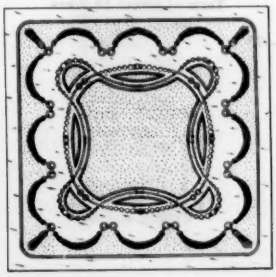
For CLASS	See PATENT NO.
D32–048	263,922
D32–058	263,923
D34–024	263,941
D32–021	263,959
D20–010	263,964
D32–031	264,011
D34–043	264,014

DESIGNS

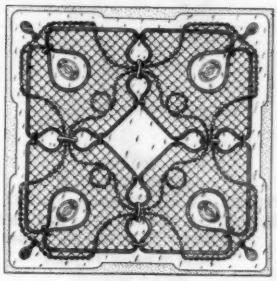
APRIL 20, 1982

263,890
SHIRT
Beverly Dalton, 524 Altman La., Okeechobee, Fla. 33472
Filed Apr. 2, 1979, Ser. No. 26,055
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208

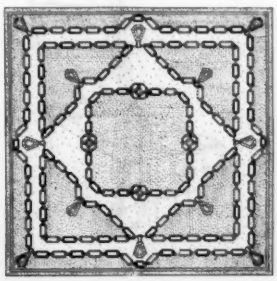
263,891
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,631
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395



263,892
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,632
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395



263,893
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,633
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395

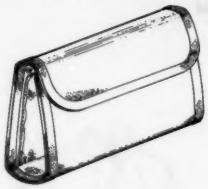


263,894
NEEDLE HOLDER
Tae Yong Chung, 478-3 Onchundong Dongraeku, Busan, D.P.R. of Korea
Filed Jan. 28, 1980, Ser. No. 116,221
Claims priority, application D.P.R. of Korea, Dec. 27, 1979, 4976
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D3—21

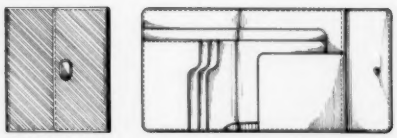
263,895
GLASS THIMBLE
Walter P. Petersen, Chicago, Ill., assignor to C.G. Crystal Glass Tube & Cylinder Co., Chicago, Ill., a part interest
Filed May 4, 1979, Ser. No. 35,849
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—29

263,896
COMPARTMENTED STORAGE BOX
James P. Glasgow, Dallas, Tex., assignor to Mary Kay Cosmetics, Inc., Dallas, Tex.
Filed Sep. 21, 1978, Ser. No. 944,593
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1

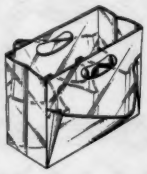
263,897
COSMETIC BAG
Susan Thornton, 5677 Cabot Dr., Oakland, Calif. 94611
Filed Jan. 7, 1980, Ser. No. 109,854
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—39



263,898
PURSE
Norbert H. J. Linke, Milan, Italy, assignor to S. T. DuPont, Paris, France
Filed Oct. 4, 1979, Ser. No. 82,181
Claims priority, application France, Apr. 4, 1979, 79 42352
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56

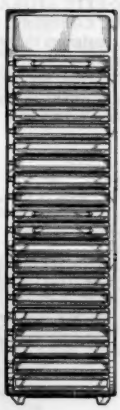


263,899
DIAPER BAG ORGANIZER
Arlyne Lynn, 1904 Crest Dr., Los Angeles, Calif. 90034
Filed Apr. 24, 1980, Ser. No. 143,353
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73

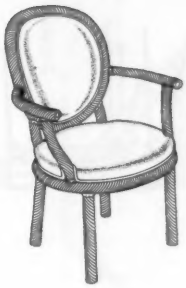


263,900
CHILD'S WARDROBE
Ann M. Stinard, 907 N. Cayuga St., Ithaca, N.Y. 14850
Filed May 21, 1979, Ser. No. 40,508
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—5

263,901
DISPLAY RACK FOR CARPET SAMPLES
Bernard Dassonville, Orleans, France, assignor to Onis, La Guerche-sur-l'Aubois, France
Filed Sep. 19, 1979, Ser. No. 76,921
Claims priority, application France, Mar. 20, 1979, 190/79
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—23



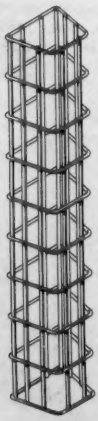
263,902
ARM CHAIR
Marcello Mioni, 9833 San Cir., Beverly Hills, Calif. 90210
Filed Aug. 7, 1978, Ser. No. 931,782
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



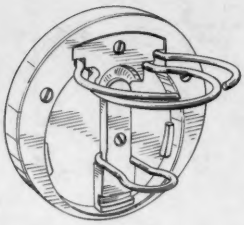
263,903
HOSE HOLDER
D. Gordon Johnston, 311 Court Ave., Ventura, Calif. 93003
Filed Mar. 10, 1980, Ser. No. 128,557
Term of patent 14 years
Int. Cl. D8—*08*; D99—*00*
U.S. Cl. D6—112

263,904
SWING SEAT OR SIMILAR ARTICLE
Barry E. Wheelock, 67 Crestwood Ave., Nutley, N.J. 07110
Filed Nov. 7, 1977, Ser. No. 849,452
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—113

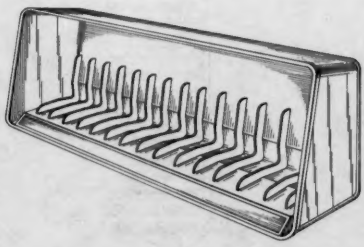
263,905
SUPPORT FOR FLEXIBLE DRYER VENT PIPE
Paul Flora, P.O. Box 370, Quinter, Kans. 67752
Filed May 1, 1979, Ser. No. 34,993
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



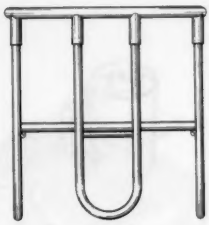
263,906
COLLAPSIBLE HOLDER FOR A CONTAINER
William Ormond, 233 Hillcrest Ave., Hamilton, Ontario, Canada (L8P 2X3)
Division of Ser. No. 901,727, May 1, 1978, Pat. No. D. 256,528.
This application Oct. 23, 1979, Ser. No. 87,613
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



263,907
VIDEO CASSETTE STORAGE RACK
Pasquale L. Pepicelli, Jr., Chelmsford, and Edward Yonkers, Newton, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.
Filed Feb. 22, 1980, Ser. No. 123,742
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—130



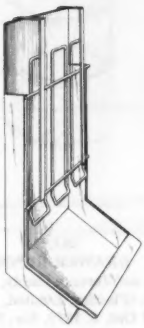
263,908
TABLE
Marion Imber, Stamford, Conn., assignor to Ray Control Corp., New York, N.Y.
Filed Feb. 11, 1980, Ser. No. 120,171
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



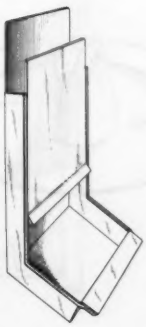
263,909
TABLE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 28, 1979, Ser. No. 70,700
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

263,910
TABLE
Stephen H. Robertson, and Randall L. Ward, both of P. O. Box 30153, Raleigh, N.C. 27622
Continuation-in-part of Ser. No. 854,984, Nov. 25, 1977. This application Sep. 29, 1980, Ser. No. 191,483
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

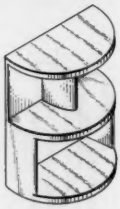
263,911
COMBINED PACKAGE DISPLAY AND DISPENSING RACK
Wolff Heinrichsdorff, Hösel, Fed. Rep. of Germany, assignor to Life Savers, Inc., New York, N.Y.
Filed Nov. 5, 1979, Ser. No. 91,667
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—181



263,912
COMBINED PACKAGE DISPLAY AND DISPENSING RACK
Wolff Heinrichsdorff, Hösel, Fed. Rep. of Germany, assignor to Life Savers, Inc., New York, N.Y.
Filed Nov. 5, 1979, Ser. No. 91,670
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—181

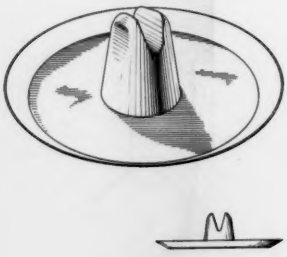


263,913
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,294
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



263,914
DRAWER RUNNER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L.B. (Plastics) Limited, Derby, England
Filed Oct. 3, 1979, Ser. No. 81,347
Claims priority, application United Kingdom, Apr. 12, 1979, 989482
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

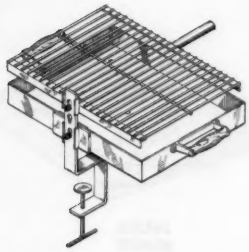
263,915
FOOD SERVICE TRAY
Vivian J. Kohan, 210 Plainfield Ave., Pen Argyl, Pa. 18072
Filed Apr. 21, 1980, Ser. No. 142,225
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5



263,916
SPLASH DAMPENING CUP
Ovid B. Reece, 310 Ash St., Crawford, Nebr. 69339
Filed Aug. 10, 1979, Ser. No. 65,600
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

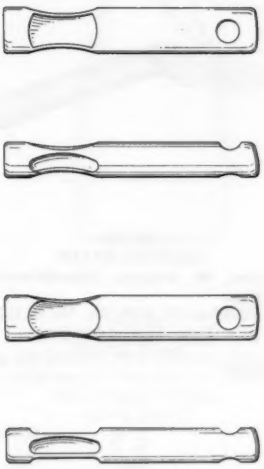
263,917
NUT PICKER
Billy B. McCulley, Rte. 1, Box 518, Longview, Tex. 75602
Filed Mar. 10, 1980, Ser. No. 128,884
Term of patent 14 years
Int. Cl. D07—*04, 06*
U.S. Cl. D7—106

263,918
PORTABLE BARBECUE
Charles N. Boyd, 904 Joni La., Redlands, Calif. 92373
Filed Feb. 25, 1980, Ser. No. 124,583
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



263,919
TRIVET
William M. Anderson, Jr., Lynnwood, Wash., assignor to AMG Industries, Inc., Seattle, Wash.
Filed Feb. 20, 1980, Ser. No. 122,887
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130

263,920
HANDLE FOR KITCHEN TOOLS, UTENSILS OR THE LIKE
Fredrich W. Usbeck, Frauenstrasse 33, D-3550 Marburg an der Lahn, Fed. Rep. of Germany
Filed Apr. 3, 1979, Ser. No. 26,612
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, MR 276-6; Feb. 9, 1979, MR 286-9; Feb. 21, 1979, MR 287-21
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—132

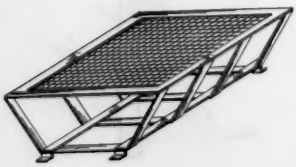


263,921
FORK OR SIMILAR ARTICLE
Vivanna T. B. Hube, Jakarta, Indonesia, assignor to Dansk International Designs Ltd., Mount Kisco, N.Y.
Filed Jul. 8, 1980, Ser. No. 166,937
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

263,922
PAINT SCRAPER HANDLE
Robert H. Bruno, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Aug. 29, 1979, Ser. No. 70,858
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—48

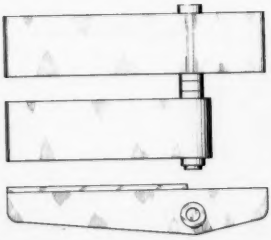
263,923
CLOTHES DRYER
Taro Koshiyama, 46, 2-chome, Minamikinomoto, Yao-shi, Osaka-fu, Japan
Filed May 31, 1979, Ser. No. 44,113
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—58

263,924
FIRE SCREEN
Kenneth R. Hinsham, 2005 McGregor Dr., Rancho Cordova, Calif. 95670
Filed Aug. 28, 1979, Ser. No. 70,698
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



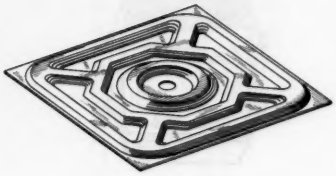
263,925
PANEL CARRIER
John R. Whipple, 208 W. Grant, Bozeman, Mont. 59715
Filed Oct. 19, 1979, Ser. No. 86,283
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

263,926
HINGE
William P. White, c/o Mechanical Applications, Inc., Wiscasset, Me. 04578
Filed Feb. 11, 1980, Ser. No. 120,555
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—327



263,927
ROOF INSULATION WASHER
George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1979, Ser. No. 92,159
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

263,928
ROOF INSULATION WASHER
George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1979, Ser. No. 92,160
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

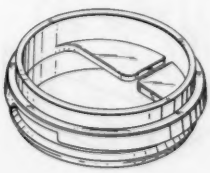


263,929
BOTTLE
John A. Grip, Wayne, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 13, 1980, Ser. No. 121,192
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

263,930
BOTTLE
John Pardo, Yonkers, N.Y., and David A. Jones, Kettering, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Apr. 11, 1980, Ser. No. 139,389
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—373

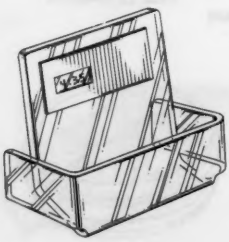
263,931
PERFUME BOTTLE
Andre de Nola, 310 Geary St., San Francisco, Calif. 94102
Filed Sep. 6, 1979, Ser. No. 73,079
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—406

263,932
CONTAINER ADAPTOR RING OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 16, 1979, Ser. No. 66,897
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—434



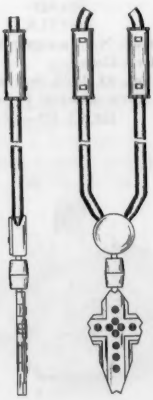
263,933
DISPENSING CAP FOR BOTTLE OR THE LIKE
Howard L. Jones, Muncie, and John M. Blackman, Brownsburg, both of Ind., assignors to Ball Corporation, Muncie, Ind.
Filed Sep. 14, 1979, Ser. No. 75,674
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—447

263,934
TIMEPIECE CARD HOLDER
Thomas J. Fuerneisen, Carefree, Ariz., assignor to Microtime, Incorporated, Scottsdale, Ariz.
Filed Apr. 25, 1980, Ser. No. 143,823
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

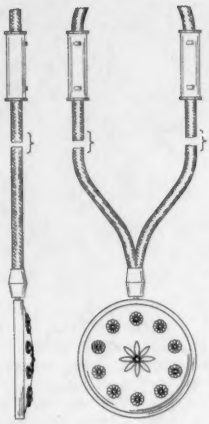


263,935
WRISTWATCH
Susumu Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Sep. 13, 1979, Ser. No. 75,357
Claims priority, application Japan, Mar. 13, 1979, 54-9735
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

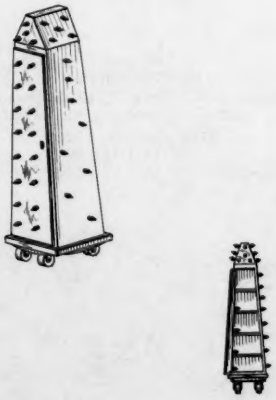
263,936
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Dec. 31, 1979, Ser. No. 108,600
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7



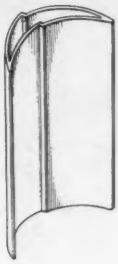
263,937
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Dec. 31, 1979, Ser. No. 108,663
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7



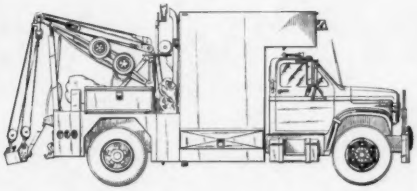
263,938
ARTIFICIAL CHRISTMAS TREE
Kenneth R. Gordon, 152 E. 53rd St., Brooklyn, N.Y. 11203
Filed Feb. 29, 1980, Ser. No. 125,936
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—118



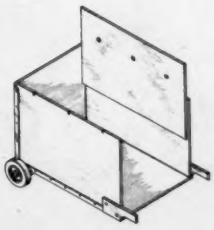
263,939
VASE OR SIMILAR ARTICLE
Barry D. Katcher, Lakewood, N.J., assignor to Baatz Ceramics, Jackson, N.J.
Filed Dec. 17, 1979, Ser. No. 104,031
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—143



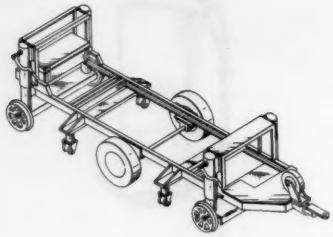
263,940
TOW TRUCK
Kenneth Williamson, 508 Smedley Ave., Media, Pa. 19063
Filed Jul. 13, 1979, Ser. No. 57,185
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—14



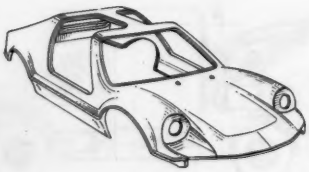
263,941
BRUSH BALER CART
Gilbert G. Lentz, 1820 La Playa Way, Sacramento, Calif. 95825
Filed Jan. 15, 1980, Ser. No. 112,208
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24



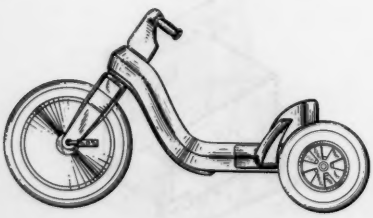
263,942
MOBILE CARRIAGE FOR COMPRESSORS OR THE LIKE
Ross H. Francis, Charlotte, N.C., assignor to Southern Machine Products, Inc., Charlotte, N.C.
Filed Aug. 27, 1979, Ser. No. 70,270
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—36



263,943
AUTOMOBILE BODY SHELL
Larry B. Henry, 11439 Elmcrest St., El Monte, Calif. 91732
Filed Sep. 13, 1979, Ser. No. 74,965
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

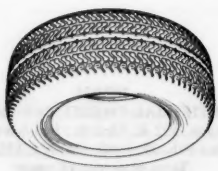


263,944
CHILD'S RIDING VEHICLE
Avi Arad, Westport, Conn., and Earl B. Kane, Flemington, N.J., assignors to Empire of Carolina, Inc., New York, N.Y.
Filed Jan. 19, 1979, Ser. No. 4,954
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112

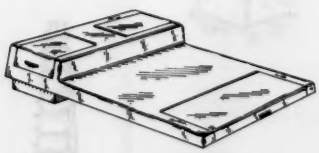


263,945
BICYCLE RACK
Douglas W. Voegeli, White Bear Lake, Minn., assignor to Thermograte, Inc., Roseville, Minn.
Filed Apr. 9, 1979, Ser. No. 28,505
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115

263,946
VEHICLE TIRE
Hiroshi Kojima, Hino; Hideaki Nishio, Urawa, and Hideki Yokoyama, Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,699
Claims priority, application Japan, Jun. 30, 1979, 54-27061
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

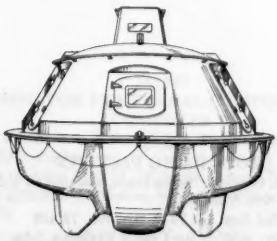


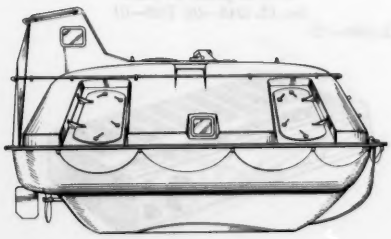
263,947
PICKUP TOPPER
David B. Hardin, 5433 Trident Dr., Kerns, Utah 84118
Filed Jun. 8, 1979, Ser. No. 46,610
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



263,948
VEHICLE REAR VIEW MIRROR
Fritz Niggemann, Essen, Fed. Rep. of Germany, assignor to Busch & Müller, Meinerzhagen, Fed. Rep. of Germany
Filed Jan. 16, 1979, Ser. No. 3,936
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 523; Sep. 18, 1978, 525
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—189

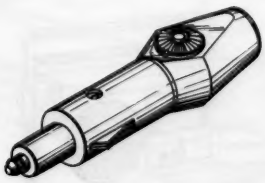
263,949
SURVIVAL CAPSULE
Eric R. Hooper, Lakeside, and Augustine J. Pagan, El Cajon, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.
Filed Nov. 23, 1979, Ser. No. 97,062
Term of patent 14 years
Int. Cl. D12—*14;* D29—*02*
U.S. Cl. D12—315





263,950
ELECTRICAL BOX HOLDER
Willis C. Broyhill, 548 Soboba, San Jacinto, Calif. 92383
Filed Dec. 3, 1979, Ser. No. 99,610
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—12

263,951
ELECTRICAL ACCESSORY PLUG FOR AUTOMOBILE LIGHTER OUTLET
Richard Antretter, Stockdorf, and Werner Siersch, Soecking, both of Fed. Rep. of Germany, assignors to RIAN-Apparate- und Vorrichtungsbau Gesellschaft mit beschränkter Haftung, Gauting, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,184
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 11369
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



263,952

DEMAGNETIZING DEVICE

Keiichi Yoshizawa, Chiba, Japan, assignor to TDK Electronics, Tokyo, Japan

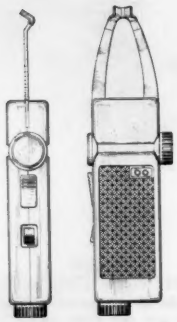
Filed Jan. 10, 1979, Ser. No. 2,576

Claims priority, application Japan, Jul. 17, 1978, 53-29747

Term of patent 14 years

Int. Cl. D13—*99*

U.S. Cl. D13—99



263,953

COMBINED RADIO RECEIVER AND CASSETTE TAPE RECORDER

Kunio Hoshino, Katano, and Katsutoshi Kido, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1979, Ser. No. 97,941

Claims priority, application Japan, May 31, 1979, 54-22463

Term of patent 14 years

Int. Cl. D14—*01, 03*

U.S. Cl. D14—5

263,954

HEADGEAR TO BE USED IN RELAXATION THERAPY

Michael Stratman, Bockhorn, Fed. Rep. of Germany, assignor to Hanscarl Leuner, Göttingen, Fed. Rep. of Germany

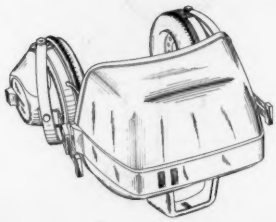
Filed Apr. 20, 1979, Ser. No. 31,911

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 6MR 313

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—36



263,955

CLOCK RADIO RECEIVER

Hans T. Meelen, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

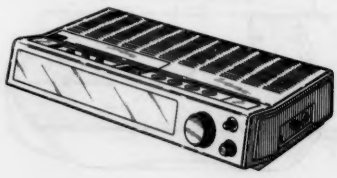
Filed Sep. 14, 1979, Ser. No. 75,469

Claims priority, application United Kingdom, Mar. 20, 1979, 989122/79

Term of patent 14 years

Int. Cl. D14—*03;* D10—*01*

U.S. Cl. D14—73

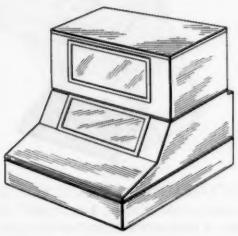


263,956

ACOUSTICAL ENCLOSURE FOR TELEPRINTERS OR THE LIKE

Donald R. Cunningham, Randolph, and James E. Sulewsky, Mendham, both of N.J., assignors to Acoustical Design Incorporated, Mendham, N.J.

Filed May 24, 1979, Ser. No. 42,242
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—03

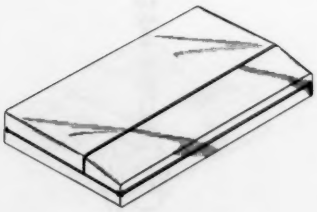


263,957

HOUSING FOR PERIPHERAL COMPONENT FOR COMPUTER

John H. Pemberton, 9 Park View, Needingworth, Cambridge PE17 3TJ, England

Filed Oct. 11, 1979, Ser. No. 83,797
Claims priority, application United Kingdom, Apr. 12, 1979, 989491/79
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107

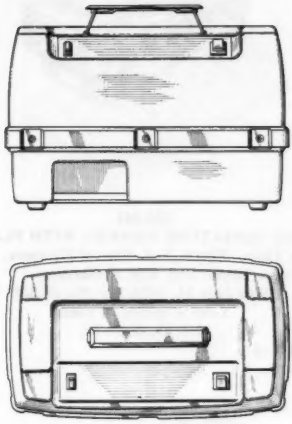


263,958

HOUSING FOR PUMP OR THE LIKE

Charles W. Pelly, Calabasas, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 810,314, Jun. 27, 1977. This application Apr. 9, 1979, Ser. No. 27,960
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

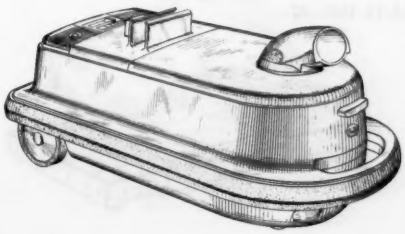


263,959

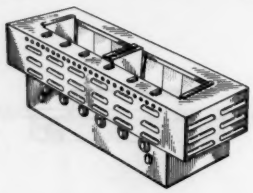
CANISTER VACUUM CLEANER

Robert O. Ernest, Oak Park; Norman A. Steinkamp, LaGrange Park, and Bernard B. Bluestein, DesPlaines, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

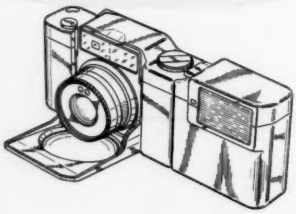
Filed Jul. 9, 1980, Ser. No. 167,266
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—21



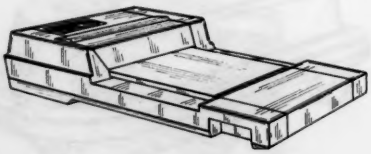
263,960
BROILER OR THE LIKE
Roger M. Berg, 5845 SW. 190th, Aloha, Oreg. 97005
Filed Aug. 17, 1979, Ser. No. 67,369
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—104



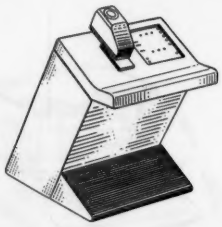
263,961
COMBINED MINIATURE CAMERA WITH FLASH UNIT
Karl-Heinz Lange, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke, Bünde, Fed. Rep. of Germany
Filed May 14, 1979, Ser. No. 38,538
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—6



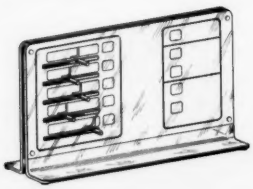
263,962
DOCUMENT FEEDING MACHINE FOR ELECTRONIC COPYING MACHINE
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Feb. 27, 1980, Ser. No. 125,128
Claims priority, application Japan, Sep. 7, 1979, 54-37739
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



263,963
PHOTOGRAPHIC PRINTER
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Lutz Rabold, Hanau, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,327
Claims priority, application Fed. Rep. of Germany, May 2, 1979, G 161/79
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D16—34



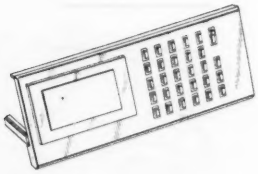
263,964
APPARATUS FOR SELECTING EYEGLASS FRAMES
John C. Butman, Concord, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 9, 1979, Ser. No. 28,413
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D20—10



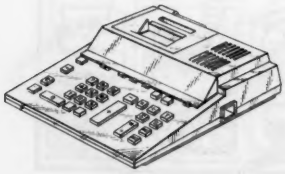
263,965
GUITAR
Gene Klein, 655 Madison Ave., New York, N.Y. 10021
Filed Feb. 29, 1980, Ser. No. 126,051
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—18

263,966
ELECTRONIC CALCULATOR WITH TIMEPIECE
Yoshiaki Kobayashi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 3, 1979, Ser. No. 58,468
Term of patent 14 years
Int. Cl, D18—*01*
U.S. Cl. D18—2

263,967
DESK TOP ELECTRONIC CALCULATOR
Masaaki Sakai, Tokyo, and Junichi Motoyoshi, Funabashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 28, 1980, Ser. No. 125,688
Claims priority, application Japan, Aug. 31, 1979, 36544/1979
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

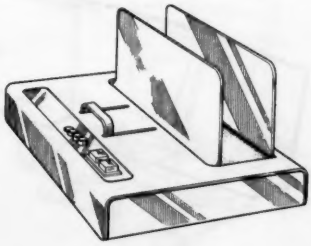


263,968
DESK-TOP ELECTRONIC CALCULATOR
Takashi Hirata, and Kazuyoshi Odagawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 139,777
Claims priority, application Japan, Oct. 18, 1979, 43798/1979
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

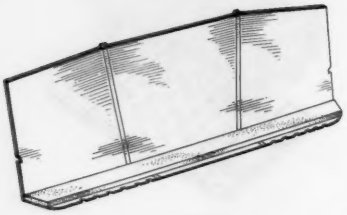


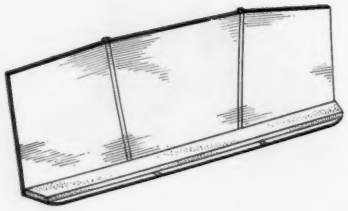
263,969
ELECTRONIC DICTIONARY
Takashi Hirata, and Kunio Hirose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1980, Ser. No. 141,921
Claims priority, application Japan, Oct. 24, 1979, 54-44634
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

263,970
BOOK BINDING MACHINE
Sture Wiholm, Johanneshov, Sweden, assignor to Semotex AB, Stockholm, Sweden
Filed Oct. 14, 1980, Ser. No. 197,142
Claims priority, application Sweden, Apr. 15, 1980, 800783
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D18—34



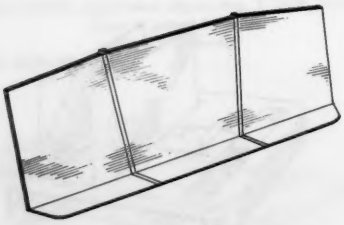
263,971
EASEL OR SIMILAR ARTICLE
Donald B. Smith, R.R. #1, Mount Brydges, Ontario, Canada (N0L 1W0)
Filed Jun. 4, 1979, Ser. No. 45,234
Term of patent 14 years
Int. Cl. D19—*02;* D06—*04*
U.S. Cl. D19—91

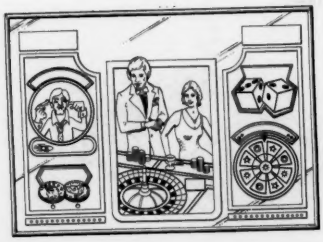




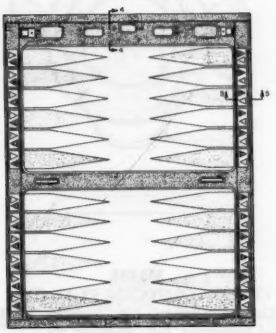
263,972
HAND HELD MESSAGE BOARD WITH CHANGEABLE MESSAGE CARDS
Herbert Pasker, Cherry Hill, N.J., assignor to Magic Marker Corporation, Cherry Hill, N.J.
Filed Jun. 28, 1978, Ser. No. 920,224
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10

263,973
ELECTRONIC GAME HOUSING
Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316
Filed Oct. 25, 1979, Ser. No. 87,989
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

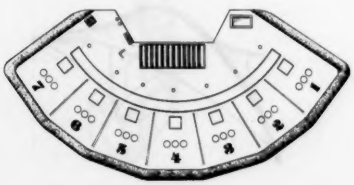




263,974
GAME PLAYING BOARD
Kim J. Brand, 1405 N. Wallace, Indianapolis, Ind. 46201
Filed Jul. 6, 1979, Ser. No. 55,451
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—16

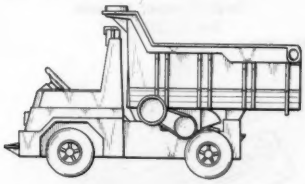


263,975
GAMING TABLE
John S. Quiroga, Las Vegas, Nev.; Edward Fishman, Encino, Calif.; David Fishman, Van Nuys, Calif., and Duke Rohliffs, Thousand Oaks, Calif., assignors to World Championship of Blackjack, Inc., Tarzana, Calif.
Filed Dec. 26, 1979, Ser. No. 107,198
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37

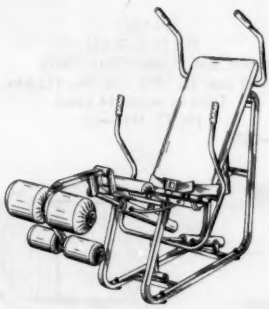


263,976
PLAYING CARD
Gregory J. Vallone, 9950 Delco, Chatsworth, Calif. 91311
Filed Aug. 30, 1979, Ser. No. 70,965
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—47

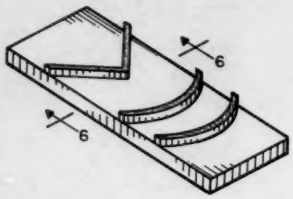
263,977
TOY DUMP TRUCK
Jack J. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 15, 1980, Ser. No. 112,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



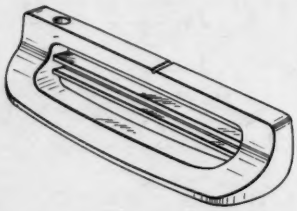
263,978
PHYSICAL EXERCISER
Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513
Filed Mar. 10, 1980, Ser. No. 128,500
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



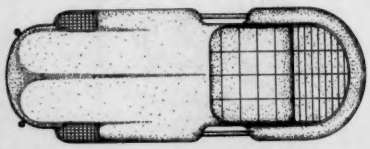
263,979
SLOW PITCH SOFTBALL PITCHER'S AID
Walter D. Van Gerpen, R.R. #1(Westgate Subd.), Ames, Nebr. 68621, and Gene F. Van Gerpen, 2227 E. Military St., Fremont, Nebr. 68025
Filed Sep. 4, 1979, Ser. No. 72,135
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199



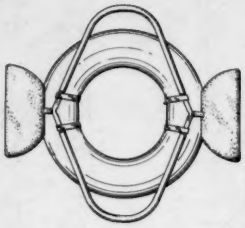
263,980
GOLF CLUB HEAD
Masashi Kobayashi, Matsudo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 7, 1979, Ser. No. 101,137
Claims priority, application Japan, Jul. 21, 1979, 54-030462
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



263,981
WATER SLED
Chester L. Maddon, Rte. 5, Ada, Okla. 74820
Filed Jan. 16, 1980, Ser. No. 112,646
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



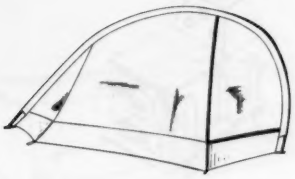
263,982
BUOYANT AMUSEMENT DEVICE
Leonard I. Behl, 436 Graystone, Kansas City, Kans. 66103
Filed Sep. 21, 1979, Ser. No. 77,782
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—237



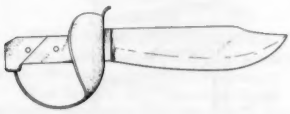
263,983
CHILD'S OUTDOOR PLAY GYM
Harold W. Carlson, Dothan, Ala., assignor to Brown Group Recreational Industries, Inc., Bedford, Pa.
Filed Nov. 13, 1978, Ser. No. 959,928
Term of patent 7 years
Int. Cl. D21—*03*
U.S. Cl. D21—245

263,984
CANOPY FOR USE WITH VEHICLE OR THE LIKE
Charles W. Moss, Moss Tent Works, Mt. Battle St., Camden, Mass. 04843
Filed Jun. 1, 1979, Ser. No. 44,591
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

263,985
TENT
Charles W. Moss, Moss Tent Works, Mt. Battle St., Camden, Me. 04843
Filed Aug. 7, 1979, Ser. No. 64,520
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

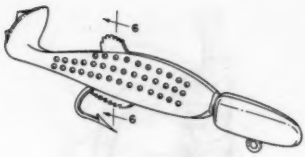


263,986
BUSH KNIFE OR THE LIKE
Sidney J. Coley, Rte. 6, Box 82, Albemarle, N.C. 28001
Filed Oct. 10, 1978, Ser. No. 949,858
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—1

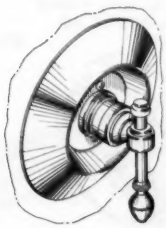


263,987
PELLET HOLDER
Keith Milliman, Fairport, N.Y., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Mar. 10, 1980, Ser. No. 129,111
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—14

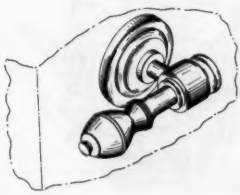
263,988
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710
Filed Dec. 14, 1979, Ser. No. 103,482
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



263,989
COMBINED SHOWER HANDLE AND ESCUTCHEON
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,831
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31

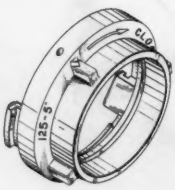


263,990
COMBINED TOILET TRIP LEVER AND ESCUTCHEON
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,834
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31

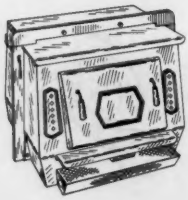


263,991
COMBINED LAVATORY SPOUT AND DRAIN CONTROL
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed May 8, 1980, Ser. No. 147,751
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

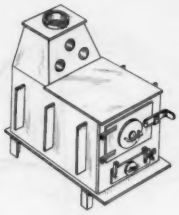
263,992
LUGGED ANNULAR COUPLING
Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann Armaturenfabrik, Giengen, Fed. Rep. of Germany
Filed Mar. 20, 1979, Ser. No. 22,240
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 7830241
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



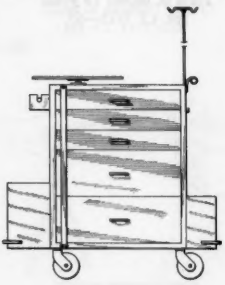
263,993
WOOD BURNING STOVE INSERT FOR FIREPLACE
Hal Larson, Walla Walla, Wash., assignor to Woodcutters Manufacturing, Inc., Walla Walla, Wash.
Filed Feb. 29, 1980, Ser. No. 126,039
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



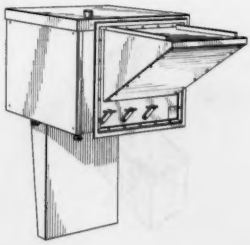
263,994
WOOD BURNING STOVE OR SIMILAR ARTICLE
Laurence J. Antone, Star Rte., Dalton, Mass. 01226
Filed Feb. 28, 1980, Ser. No. 125,377
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



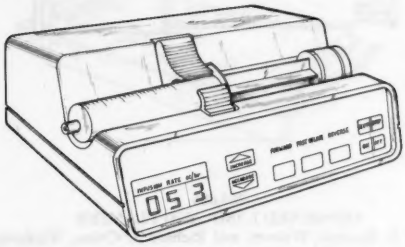
263,995
CRASH CART FOR HOSPITALS
Gerald L. Steele, Cincinnati, Ohio, assignor to Providence Hospital, Cincinnati, Ohio
Filed Sep. 12, 1979, Ser. No. 74,676
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—1.1



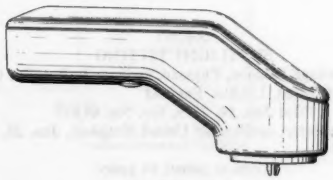
263,996
X-RAY FILM PROCESSOR
Warren G. Fischer, 4N003 Wildrose Rd., St. Charles, Ill. 60174
Filed Dec. 6, 1979, Ser. No. 100,965
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—2

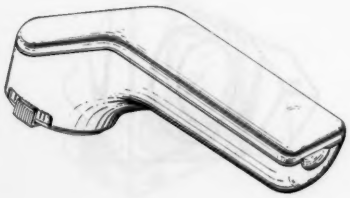


263,997
INFUSION PUMP APPARATUS
Andreas Preussner, Berkeley, Calif., assignor to Cordis Dow, Miami, Fla.
Filed Nov. 13, 1979, Ser. No. 93,579
Term of patent 14 years
Int. Cl. D24—*01;* D15—*02*
U.S. Cl. D24—8

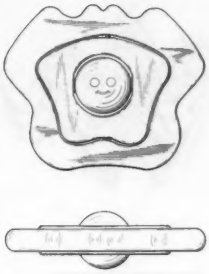


263,998
BODY MASSAGE APPLIANCE
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun AG, Kronberg, Fed. Rep. of Germany
Filed Sep. 12, 1979, Ser. No. 74,632
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 73 MR 8780
Term of patent 14 years
Int. Cl. D28—*03;* D4—*02*
U.S. Cl. D24—41

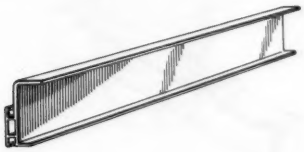




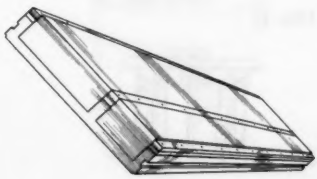
263,999
INFANT TEETHING TOY
Andrew I. Bergman, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 26, 1979, Ser. No. 88,607
Term of patent 14 years
Int. Cl. D24—*04;* D21—*01*
U.S. Cl. D24—45



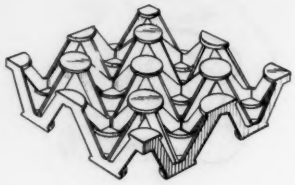
264,000
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Lévis, P.Q., Canada
Filed Apr. 30, 1980, Ser. No. 145,255
Claims priority, application France, Nov. 14, 1979, 79 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



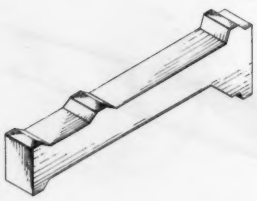
264,001
PREFABRICATED WALL CONSTRUCTION UNIT FOR HOUSES
Sven J. Ankarswed, Västerås, Sweden, assignor to Ankarswedshus AB Vasteras, Sweden
Filed Jun. 15, 1979, Ser. No. 48,923
Claims priority, application Sweden, Jan. 22, 1979, 790160
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



264,002
SKELETAL PANEL OR SIMILAR ARTICLE
James S. Hardigg, Conway, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.
Filed Dec. 17, 1979, Ser. No. 104,067
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—87



264,003
INTERLOCK CRIB
Hugh G. Campbell, 1846 S. 12th East, Salt Lake City, Utah 84105
Filed May 5, 1980, Ser. No. 146,632
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D25—80

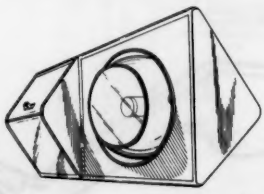


264,004
ADAPTER FOR CANDLESTICKS
John C. Swan, Elkland, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 16, 1979, Ser. No. 58,130
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—23

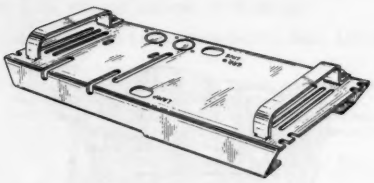
264,005
PHONOGRAPH LIGHT
Guy L. Standing, 2560 N. Holliston Ave., Altadena, Calif. 91001
Filed May 29, 1979, Ser. No. 42,934
Term of patent 3½ years
Int. Cl. D26—*04*
U.S. Cl. D26—51

264,006
COMBINED LAMP AND PLANTER
Carlo S. Bessone, Woburn, and Richard J. Citino, Winthrop, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 28, 1979, Ser. No. 108,182
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—55

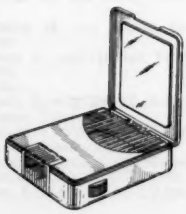
264,007
SPOTLIGHT FITTING
Robert Heritage, London, England, assignor to Rotaflex (Great Britain) Limited, London, England
Filed Jun. 14, 1979, Ser. No. 48,677
Claims priority, application United Kingdom, Jan. 25, 1979, 988,246/79
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—74



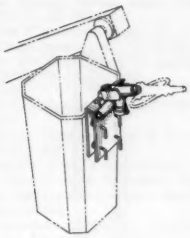
264,008
ELECTRICAL COMPONENT TRAY FOR A LUMINAIRE
Claude Barozzini, Union Grove, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Aug. 13, 1979, Ser. No. 65,906
Term of patent 14 years
Int. Cl. D13—*03;* D26—*99*
U.S. Cl. D26—113



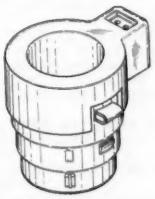
264,009
COMBINED POCKET LAMP, MIRROR AND COMB
David C. Y. Lam, Kam Bong Bldg., 6th Flr., 14, Wing Kut St., Hong Kong, Hong Kong
Filed Apr. 9, 1980, Ser. No. 138,740
Claims priority, application United Kingdom, Feb. 6, 1980, 993,494/80
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67



264,010
PORTABLE NOZZLE MOUNT FOR FIREFIGHTING NOZZLE
Darrell G. Graf, Box 4, Medina, N. Dak. 58467
Filed Aug. 23, 1979, Ser. No. 68,928
Term of patent 14 years
Int. Cl. D23—*01;* D29—*01*
U.S. Cl. D29—5



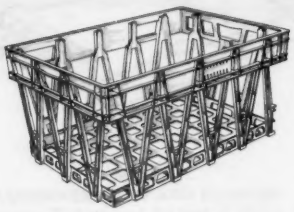
264,011
VACUUM CLEANER HOSE ADAPTER
Joseph Genoa, Freeport, N.Y., assignor to Atlantic Vacuum Parts Corp., Long Beach, N.Y.
Filed Jun. 20, 1980, Ser. No. 161,585
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31



264,012
TELLER MACHINE MODULE
Charles Hauser, and Sharon Johnson, both of Atlanta, Ga., assignors to The Central Trust Company, N.A., Cincinnati, Ohio
Filed Apr. 14, 1980, Ser. No. 140,236
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28

264,013
SUPPORT STAND FOR A MAILBOX OR SIMILAR ARTICLE
Henry H. Sandifer, 242 Hastings Ct., Doylestown, Pa. 18901
Filed Aug. 6, 1979, Ser. No. 63,954
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—32

264,014
TOTE TRAY
Jean Cornou, Verrieres-le-Buisson, France, assignor to Allibert Exploitation, S.A., Grenoble, France
Filed Aug. 27, 1979, Ser. No. 69,985
Claims priority, application France, Apr. 2, 1979, 79 2517
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—43



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PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1982

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American Safety Razor Company: *See—*
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Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,325,189, Cl. 33-179.50B.

Barbuto, John P. Athlete's breathing apparatus. 4,325,365, Cl. 128-201.130.

Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, to Farmitalia Carlo Erba S.p.A. Anthracycline glycosides, their preparation, use and compositions thereof. 4,325,946, Cl. 424-180.000.

Barkalow, Richard H.: *See*—
Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., 4,326,011, Cl. 428-641.000.

Barker, Theodore L., to Figgie International Inc. Method of and apparatus for utilizing auxiliary grid in case packer machine. 4,325,208, Cl. 53-448.000.

Barkow, Helmut; and Frank, Karl, to Telefonbau und Normalzeit GmbH. Hook switch for telephone instruments. 4,326,108, Cl. 179-164.000.

Barlet, Loren E. Method of treating welding rod for corrosion resistance. 4,325,749, Cl. 148-6.14R.

Barmag Barmer Maschinenfabrick: *See*—
Adenheuer, Frank, 4,325,213, Cl. 57-280.000.

Barmag Barmer Maschinenfabrik: *See*—
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, 4,325,517, Cl. 242-18.100.

Barnett, Arthur F.: *See*—
Lindell, James W.; and Barnett, Arthur F., 4,325,506, Cl. 224-243.000.

Barnhill, Donald R., to B&W Metals Company, Inc. Pressure cooker closure fastening means. 4,325,491, Cl. 220-316.000.

Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, to University of Delaware. Method for continuous deposition by vacuum evaporation. 4,325,986, Cl. 427-74.000.

Barry, Donald E.: *See*—
Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, 4,325,483, Cl. 209-3.100.

Bartholet, Stephen J.; and Chvostal, Paul J., to Odetics, Inc. Continuous thru-wire welding machine. 4,326,115, Cl. 219-56.100.

Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Hydrocarbon processing. 4,325,809, Cl. 208-91.000.

Bartholic, David B.; and Byrne, John W., to Engelhard Minerals & Chemicals Corporation. Control of emissions in flue gas. 4,325,817, Cl. 208-164.000.

Bartholomew, Lowell T.: *See*—
Mallos, Gene G.; and Bartholomew, Lowell T., 4,326,221, Cl. 358-210.000.

Bartish, Charles M.; and Hayes, Larry J., to Air Products and Chemicals, Inc. Heterogeneous catalyst supports. 4,325,834, Cl. 252-429.00R.

Bartish, Charles M.; and Tucker, Donald F., to Air Products and Chemicals, Inc. Method of producing nitrous oxide. 4,325,932, Cl. 423-402.000.

Bartos, Henry: *See*—
Evans, Mark, 4,325,662, Cl. 409-82.000.

Base, Leonard C. Home heating apparatus. 4,325,509, Cl. 237-51.000.

BASF Aktiengesellschaft: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.

BASF Wyandotte Corporation: *See*—
Narayan, Thirumurti; and Patton, John T., Jr., 4,326,043, Cl. 521-137.000.

Battelle Development Corporation: *See*—
Spence, Kemet D.; and Andrews, Robert E., 4,325,937, Cl. 424-16.000.

Bauer, Jack N.: *See*—
DiGiulio, Adolph V.; and Bauer, Jack N., 4,326,044, Cl. 521-147.000.

Bauer, Michael E.; and Sleder, Richard L., to Brunswick Corporation. Alternator-powered breakerless capacitor discharge ignition system having improved low-speed timing characteristics. 4,325,350, Cl. 123-605.000.

Bauer, Peter; and Lazrus, Julian, to Bowles Fluidics Corporation. Washing apparatus. 4,325,235, Cl. 68-3.0SS.

Bauer, Richard D., to Du Pont de Nemours, E. I., and Company. Additive in a photopolymerizable composition for reducing its adhesion to a support film. 4,326,010, Cl. 428-483.000.

Baumberger, Otto: *See*—
Kalbskopf, Reinhard; and Baumberger, Otto, 4,325,987, Cl. 427-110.000.

Baumert, Jean: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.

Baumgarth, Rolf: *See*—
Hefter, Erik; and Baumgarth, Rolf, 4,325,573, Cl. 291-3.000.

Baur, Rudolf, to Swiss Aluminium Ltd. Process for degrease annealing thin strip and foil made of aluminum and aluminum alloys. 4,325,753, Cl. 148-20.300.

Baxter Travenol Laboratories, Inc.: *See*—
Boggs, Daniel R.; Kwong, Peter C.; and Laurin, Dean G., 4,325,417, Cl. 141-98.000.
Buckles, Richard G.; and Garber, Jan W., 4,326,025, Cl. 435-2.000.

Bayer Aktiengesellschaft: *See*—
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, 4,326,066, Cl. 548-256.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Grogler, Gerhard, 4,325,887, Cl. 260-456.00P.
Harms, Wolfgang; Wunderlish, Klaus; and von Oertzen, Klaus, 4,325,705, Cl. 8-676.000.
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,325,948, Cl. 424-200.000.
Mohring, Edgar; Muller, Hanns P.; and Wagner, Kuno, 4,326,086, Cl. 568-388.000.
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, 4,326,051, Cl. 528-386.000.
Wedemeyer, Karlfried; and Bohm, Siegfried, 4,326,080, Cl. 564-402.000.
Wust, Alfredo; and Hammerstrom, Knut, 4,325,789, Cl. 203-67.000.

Baylor Company: *See*—
McNair, Willie L.; Lipke, Donald L.; Van Wambeck, Stanley H.; and Huelsman, Conrad J., 4,326,236, Cl. 361-170.000.

BBC Brown, Boveri & Company, Ltd.: *See*—
Fehr, Werner; and Schmidt, Klaus Dieter, 4,326,167, Cl. 324-415.000.

Beatrice Foods Co.: *See*—
Rossetti, James J., 4,325,779, Cl. 156-651.000.

Becher, Albert P.: *See*—
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,325,309, Cl. 109-49.500.

Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, to Siemens Aktiengesellschaft. Circuit for monitoring the voltage stress of a capacitor. 4,326,230, Cl. 361-17.000.

Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, to Metallgesellschaft Aktiengesellschaft. Process of producing reducing gas from solid fuels. 4,325,731, Cl. 75-91.000.

Beckman Instruments, Inc.: *See*—
Louderback, Allan L., 4,325,832, Cl. 252-408.000.
Sawa, Kenneth B.; and Neti, Radhakrishna M., 4,325,912, Cl. 422-95.000.

Beckstead, Leo W.: *See*—
Queneau, Paul B.; Beckstead, Leo W.; and Huggins, Dale K., 4,325,919, Cl. 423-61.000.

Beecham Group Limited: *See*—
Poyser, Robert H.; and Turner, David H., 4,325,971, Cl. 424-324.000.

Beerens, Cornelis J. Hand saw guide. 4,325,278, Cl. 83-745.000.

Beers, Eugene W., to Esselte Pendaflex Corp. Apparatus for printing and applying pressure sensitive labels. 4,325,302, Cl. 101-288.000.

Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, to Bayer Aktiengesellschaft. Process for the preparation of 1-amino-8-naphthol-3,6-disulphonic acid (H-acid). 4,325,889, Cl. 260-509.000.

Behrenz, Wolfgang: *See*—
Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,325,948, Cl. 424-200.000.

Behringwerke Aktiengesellschaft: *See*—
Bohn, Hans, 4,325,866, Cl. 260-112.00B.

Beimesch, Bruce J.; and Clark, Clarence E., Jr., to Emery Industries, Inc. Beta deuterated 2-ethylhexanol and derivatives. 4,326,070, Cl. 560-190.000.

Bell, Joseph M., to Tiffany Industries, Inc. Supply cabinet partition. 4,325,596, Cl. 312-194.000.

Bell Telephone Laboratories, Incorporated: *See*—
Auston, David H., 4,326,126, Cl. 250-211.00J.
Fenderson, Gerald L.; and Skinner, Mitchell A., 4,326,169, Cl. 328-162.000.
Lepselter, Martin P., 4,325,778, Cl. 156-643.000.

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Dreher, George L., 4,325,784, Cl. 162-135.000.
Karr, Gerald W.; and Page, Robert E., 4,325,518, Cl. 242-68.000.

Bemiss, James M., to Cadillac Gage Company. Armored grille. 4,325,283, Cl. 89-36.00F.

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Trop, Moshe; and Livne, Avinoam, 4,325,979, Cl. 426-570.000.

Ben Sadou, Jean-Claude: *See*—
DeMan, Pierre; Pimentel, Alberto; Ben Sadou, Jean-Claude; and de Riviere, Charles, 4,326,293, Cl. 455-72.000.

Bendix Corporation, The: *See*—
Hendrickson, Richard T., 4,325,567, Cl. 280-711.000.

Benson, Clark K.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.

Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, to Benteler-Werke AG. Safety steering column assembly for automobiles. 4,325,268, Cl. 74-492.000.

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Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, 4,325,268, Cl. 74-492.000.

Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, to Ceskoslovenska akademie ved. Method and equipment for treatment of fuel for fluidized bed combustion. 4,325,311, Cl. 110-245.000.

Berger, Friedrich: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.

Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., to International Business Machines Corporation. Structure and process for optimizing the characteristics of I^2L devices. 4,326,212, Cl. 357-46.000.

Bergida, Ephraim, to Tadiran Israel Electronics Industries Ltd. Current detector. 4,326,104, Cl. 179-16.0AA.

Berglund, Per R. Self-stabilizing pneumatic position sensor. 4,325,249, Cl. 73-37.600.

Bergman, Carl, to ASEA Aktiebolag. Cylindrical furnace for treating materials at high temperatures and pressures. 4,325,694, Cl. 432-247.000.

Bergmeier, Dieter: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.

Berkeley, Joseph. Posture training therapeutic neck support. 4,325,363, Cl. 128-75.000.

Bernard, Ingrid: *See*—
Kaemmerer, Erich, 4,325,368, Cl. 128-214.00R.

Berneking, Hans-Jurgen, to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG. Vehicle seats. 4,325,527, Cl. 248-394.000.

Bernhardt, Wolfgang; Kleinschmidt, Heinz; and Heiser, Joachim. Control device for a hydraulically operated load. 4,325,410, Cl. 137-596.130.

Berry, Richard M., to Kleeneze Limited. Holder for elongated articles. 4,325,484, Cl. 211-66.000.

Bertolacini, Ralph J.: *See*—
Kim, Dae K.; and Bertolacini, Ralph J., 4,325,808, Cl. 208-65.000.

Bevan, William G.; and Sterling, Larry L., to General Battery Corporation. Unitary battery formation tub. 4,325,429, Cl. 165-80.00E.

Beverley, Kenneth I.: *See*—
Regan, David M.; and Beverley, Kenneth I., 4,325,697, Cl. 434-258.000.

Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. Halomethyl derivatives of gamma-aminobutyric acid and related compounds. 4,326,071, Cl. 562-574.000.

Bick, David E., to Dowty Hydraulic Units Limited. Buffer stop. 4,325,307, Cl. 104-256.000.

Bier, Kenneth C.; and Miller, Robert J., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,325,339, Cl. 123-440.000.

Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, to Bayer Aktiengesellschaft. Magnetic metal and alloy pigments. 4,325,739, Cl. 106-290.000.

BIOTRONIK.Mess-und Therapiegerate GmbH & Co. Ingenieurburo Berlin: *See*—
Blaser, Reinhard; Olach, Klaus; and Schaldach, Max, 4,325,384, Cl. 128-696.000.

Bishop, Gilbert H. Apparatus and method for forming off-shore ice island structure. 4,325,656, Cl. 405-217.000.

Bissell, Inc.: *See*—
Rosendall, Henry J., 4,325,156, Cl. 15-41.00R.

Bittner, Hans-Joachim: *See*—
Proske, Gerhard; Van der Piepen, Rolf; and Bittner, Hans-Joachim, 4,325,781, Cl. 159-13.00A.

Bittner, Klaus-Jurgen: *See*—
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, 4,325,413, Cl. 138-109.000.

Biuro Projektow Przemyslu Metali Niezelaznych "Bipromet": *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.

Blackburn, James M.; and Paschall, Douglas C., to Western Electric Co., Inc. System for controlling the in-phase operation of a pair of motors. 4,326,152, Cl. 318-85.000.

Blackwood, Rodger; and Medway, John G. Brick molding machine. 4,325,684, Cl. 425-62.000.

Blade, John C.; Ridley, John; and Wood, Geoffrey C., to Alcan Research and Development Limited. Formable aluminum alloy sheet product. 4,325,755, Cl. 148-32.000.

Blank, Wilhelm W. A. O., to SGB Group Limited. Formwork system. 4,325,532, Cl. 249-26.000.

Blanton, William A., Jr., to Chevron Research Company. Process for removing sulfur dioxide from a gas. 4,325,926, Cl. 423-244.000.

Blaser, Reinhard; Olach, Klaus; and Schaldach, Max, to BIOTRONIK.-Mess-und Therapiegerate GmbH & Co. Ingenieurburo Berlin. Digitally controlled amplitude regulating device for electrocardiographic signals. 4,325,384, Cl. 128-696.000.

Bleckmann, Ingo. Apparatus for making infusion drinks. 4,325,293, Cl. 99-300.000.

Block, Ulrich: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.

Blockinger, Peter: *See*—
Ungnadner, Peter; Blockinger, Peter; Winkler, Friedrich; and Lermann, Peter, 4,325,523, Cl. 242-205.000.

Blount, David H. Process for the production of organic polymer polyol-alkali metal silicate emulsion. 4,325,859, Cl. 524-96.000.

Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N. Apparatus for electric resistance heating and cooling tubular workpieces. 4,326,116, Cl. 219-61.700.

Boebel, Manfred, to Richard Wolf GmbH. Surgical forceps for applying clips to fallopian tubes. 4,325,377, Cl. 128-326.000.

Boehringer Mannheim GmbH: *See*—
Eberle, Walter; and Albert, Winfried, 4,325,867, Cl. 260-112.00B.

Boeing Company, The: *See*—
Cooper, Michael G.; and Sassi, Alessandro P., 4,326,253, Cl. 364-435.000.
Ketner, Clyde R., 4,325,488, Cl. 220-1.500.

Bogan, Richard T.: *See*—
Brewer, Richard J.; and Bogan, Richard T., 4,325,997, Cl. 428-31.000.

Boggs, Daniel R.; Kwong, Peter C.; and Laurin, Dean G., to Baxter Travenol Laboratories, Inc. Connector member for sealed conduits utilizing crystalline plastic barrier membrane. 4,325,417, Cl. 141-98.000.

Bohm, Peter: *See*—
Weiler, Rolf; and Bohm, Peter, 4,325,218, Cl. 60-547.00R.

Bohm, Siegfried: *See*—
Wedemeyer, Karlfried; and Bohm, Siegfried, 4,326,080, Cl. 564-402.000.

Bohn, Hans, to Behringwerke Aktiengesellschaft. Protein, PP_{11}, a process for its preparation and its use. 4,325,866, Cl. 260-112.00B.

Bokel, Aloys H. Ultimate energy wheel drum. 4,326,132, Cl. 290-1.00R.

Bokmiller, David J.: *See*—
Darling, Stephen D.; Jendrisak, Aloysius A.; and Bokmiller, David J., 4,325,698, Cl. 434-278.000.

Bokros, Jack C.: *See*—
Slivenko, Victor; and Bokros, Jack C., 4,325,373, Cl. 128-303.00R.

Bolt, Reginald C.; Dowding, John G.; and Williams, Robert E., to Molins Limited. Cigarette testing device. 4,325,250, Cl. 73-38.000.

Bolton, Theodore S.: *See*—
Lang, Richard D.; and Bolton, Theodore S., 4,325,594, Cl. 312-100.000.

Boone, Gary W., to Texas Instruments Incorporated. Variable function programmed calculator. 4,326,265, Cl. 364-900.000.

Bopp, Alan L., to Eaton Corporation. Hoist overload clutch. 4,325,470, Cl. 192-16.000.

Borland, David L.; and Shaw, Lyle W. Boundary trace slope feature detection system. 4,326,190, Cl. 340-146.3AE.

Borucki, Robert L., to Graco Metal Products, Inc. Swing seat assembly. 4,325,578, Cl. 297-281.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Farber, Karl-Heinz; and Rupp, Alexander, 4,325,299, Cl. 100-295.000.

Bosley, Denis V.: *See*—
Gable, Derek J., 4,325,240, Cl. 70-284.000.

Bott, Kaspar: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.

Botta, Artur: *See*—
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.

Botton, Roger; and Cosserat, Dominique, to Rhone-Poulenc Industries. Contacting of plural phases. 4,325,923, Cl. 423-234.000.

Bouhaniche, Marc V. Composite piece made from flexible material and process of preparation. 4,326,003, Cl. 428-198.000.

Bourgoin, Ronald C. Process for forming ambient temperature superconducting filaments. 4,325,795, Cl. 204-180.00R.

Bouricius, Willard G.; and Feistel, Horst, to International Business Machines Corporation. High security system for electronic signature verification. 4,326,098, Cl. 178-22.080.

Bowes, William H.: *See*—
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., 4,325,207, Cl. 52-641.000.

Bowles Fluidics Corporation: *See*—
Bauer, Peter; and Lazrus, Julian, 4,325,235, Cl. 68-3.0SS.

Bowman, Donald B.; Filz, Charles J.; and Osborn, James G. Apparatus for degassing hemodialysis liquid. 4,325,715, Cl. 55-158.000.

Brady, Michael: *See*—
Lim, John; and Brady, Michael, 4,325,845, Cl. 252-455.00Z.

Bramah Stainless Products Limited: *See*—
Kelsey, Robert D., 4,325,272, Cl. 76-112.000.

Bramow, Scott B.; and Holloway, Thomas M., to Johnson Controls, Inc. Dual thermostat control apparatus with dead band response. 4,325,427, Cl. 165-27.000.

Brander berger, Helmuth-Hugo: *See*—
Busca, Giovanni; and Brandenberger, Helmuth-Hugo, 4,326,174, Cl. 331-3.000.

Brandman, Yigal: *See*—
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,326,264, Cl. 364-900.000.

Brandon, Ronald E.; and Winger, James W. Vehicle spray reduction. 4,325,563, Cl. 280-154.50R.

Brauch, Robert B.; and Heine, Martin W., to Singer Company, The. Omni-directional thread cutter. 4,325,316, Cl. 112-292.000.

Braun, David B.; and Rosen, Meyer R., to Union Carbide Corporation. Rapidly dissolved water-soluble polymer composition. 4,325,861, Cl. 523-205.000.

Braun, Rudiger, to Siemens Aktiengesellschaft. Control unit for static converter. 4,326,160, Cl. 323-241.000.

Braus, Harry, to National Distillers & Chemical Corp. Process for preparing 4,4-dihydroxydiphenyl ether. 4,326,088, Cl. 568-638.000.

Brennstoffinstitut Freiberg: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.

Breslow, Jeffrey D.: *See*—
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.

Brewer, Richard J.; and Bogan, Richard T., to Eastman Kodak Company. Processable cellulose ester compositions. 4,325,997, Cl. 428-31.000.

British Petroleum Company Limited, The: *See*—
Peel, Eric; and Dalton, Colin C., 4,326,034, Cl. 435-241.000.

Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., to GTE Products Corporation. Multilamp photoflash unit. 4,326,241, Cl. 362-11.000.

Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., to GTE Products Corporation. Multilamp photoflash unit having secured housing. 4,326,242, Cl. 362-11.000.

Broadt, David R.: *See*—
Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., 4,325,771, Cl. 156-261.000.
Shaffer, John W.; and Broadt, David R., 4,326,240, Cl. 362-11.000.

Brobeck, Helmut: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.

Bromely, James E.: *See*—
Yu, Jing-peir; and Bromely, James E., 4,325,765, Cl. 156-167.000.

Bron, Dan. Continuous fluid pressure control device and system. 4,325,406, Cl. 137-492.500.

Brooke, Robert L. High speed bulk grain moisture measurement apparatus. 4,326,163, Cl. 324-58.50A.

Broom, James C. Game with board and tokens. 4,325,554, Cl. 273-274.000.

Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., to GTE Products Corporation. Method of making a die-stamped circuit board assembly for photoflash devices. 4,325,771, Cl. 156-261.000.

Brown, Charles R. T.; and Harris, Peter, to Lever Brothers Company. Process for producing a proteinaceous material having a high water holding capacity and the material produced thereby. 4,325,868, Cl. 260-123.500.

Brown, Dale G., to American Cyanamid Co. Cyanovinyl pyrethroids and pesticidal use thereof. 4,325,969, Cl. 424-304.000.

Brown, Edgar E.; and Ruckle, Duane L., to United Technologies Corporation. Fatigue resistant nickel superalloy. 4,325,756, Cl. 148-32.500.

Brown, Lewis R. Antibiotic testing vessel. 4,326,028, Cl. 435-32.000.

Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., to United States of America, Energy. Low-drag electrical contact arrangement for maintaining continuity between horizontally movable members. 4,326,137, Cl. 310-12.000.

Brown, Stanley M.; Reagan, William J.; and Woltermann, Gerald M., to Engelhard Minerals & Chemicals Corporation. Process for production of high octane gasoline from catalytic cracking unit. 4,325,813, Cl. 208-120.000.

Broyles, Henry D.: *See*—
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.

Brunswick Corporation: *See*—
Bauer, Michael E.; and Sleder, Richard L., 4,325,350, Cl. 123-605.000.

Bryant, Mark A., to United McGill Corporation. Treatment of high-temperature stack gases containing condensable boron compounds. 4,325,922, Cl. 423-210.000.

Bschorr, Oskar; and Laudien, Eckehard, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for reducing the exhaust noise of internal combustion engines or the like. 4,325,458, Cl. 181-227.000.

Bschorr, Oskar, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Noise reducing resonators, or so-called silators. 4,325,461, Cl. 181-286.000.

BSG Schalttechnik GmbH & Co. KG.: *See*—
Faude, Rude, 4,326,124, Cl. 235-382.000.

Bubbar, Gurbachan L.: *See*—
Smith, James G.; and Bubbar, Gurbachan L., 4,326,090, Cl. 585-469.000.

Bucalo, Louis. Apparatus for collecting and processing body fluids. 4,325,388, Cl. 128-768.000.

Buckles, Richard G.; and Garber, Jan W., to Baxter Travenol Laboratories, Inc. Anti-hemolytic agent emulsions and the use thereof. 4,326,025, Cl. 435-2.000.

Buckmann, Andreas: *See*—
Wandrey, Christian; Wichmann, Rolf; Leuchtenberger, Wolfgang; Kula, Maria-Regina; and Buckmann, Andreas, 4,326,031, Cl. 435-146.000.

Buddy, H. E. Pool surface skimming apparatus. 4,325,150, Cl. 4-490.000.

Budzich, Tadeusz. Load responsive fluid control valve. 4,325,289, Cl. 91-446.000.

Budzich, Tadeusz. Exhaust pressurization of load responsive system. 4,325,408, Cl. 137-596.200.

Buhler, Ulrich; and Heinrich, Ernst, to Cassella Aktiengesellschaft. Process for the preparation of 2,6-diaminopyridine-azo dyestuffs and of their precursors. 4,325,870, Cl. 260-156.000.

Bunker Ramo Corporation: *See*—
Perna, Jiulio, 4,326,107, Cl. 179-98.000.

Burgess, Robert K., to Auto Parts Mfg. Inc. Windshield wiper blade assembly. 4,325,160, Cl. 15-250.060.

Burke Company, The: *See*—
Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.

Burke, James E., to Teschendorf, Harold A. Automatic reset control for direct spark ignition systems. 4,325,689, Cl. 431-70.000.

Burkhead, Robert B., to Allis-Chalmers Corporation. Snap together pocket filter arrangement. 4,325,718, Cl. 55-378.000.

Burlington Industries, Inc.: *See*—
Gurian, Martin E., 4,325,469, Cl. 190-53.000.

Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., to Owens-Illinois, Inc. Method and apparatus for applying plastic sleeves to containers. 4,325,762, Cl. 156-86.000.

Burns, Fredrick B.: *See*—
Balint, Peter; and Burns, Fredrick B., 4,325,157, Cl. 15-144.00B.

Burr-Brown Research Corp.: *See*—
Godsey, Ernest E., 4,326,249, Cl. 364-200.000.

Burr, Orville R.: *See*—
Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., 4,326,149, Cl. 315-289.000.

Burrage, Lawrence M.; and Guertin, Jacques P., to McGraw-Edison Company. Method and apparatus for forming compact bodies from conductive and non-conductive powders. 4,325,734, Cl. 75-225.000.

Burroughs Corporation: *See*—
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,251, Cl. 364-200.000.
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,266, Cl. 364-900.000.
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,290, Cl. 371-21.000.

Busca, Giovanni; and Brandenberger, Helmuth-Hugo, to Ebauches S.A. Passive masers having alternately operated oscillator and cavity control loops. 4,326,174, Cl. 331-3.000.

Bushman, John A., to Neotronics Limited. Gas detecting and measuring apparatus. 4,326,200, Cl. 340-632.000.

Butler, John L., to Hazeltine Corporation. Directional transducer. 4,326,275, Cl. 367-160.000.

Butt, William C., to Simplimatic Engineering Company. Conveyor support way. 4,325,480, Cl. 198-841.000.

Byk-Gulden Lomberg Chemische Fabrik GmbH: *See*—
Rainer, Georg, 4,325,962, Cl. 424-273.00P.

Byrne, John W.: *See*—
Bartholic, David B.; and Byrne, John W., 4,325,817, Cl. 208-164.000.

C. K. Kelley and Sons, Inc.: *See*—
Jones, William W., 4,325,660, Cl. 406-84.000.

Cabot Corporation: *See*—
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,325,686, Cl. 425-371.000.

Cadillac Gage Company: *See*—
Bemiss, James M., 4,325,283, Cl. 89-36.00F.

Calderara, Reto: *See*—
Guth, Werner; Wolfer, Peter; Dahler, Hanspeter; and Calderara, Reto, 4,326,143, Cl. 310-329.000.

Calgon Corporation: *See*—
Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., 4,325,794, Cl. 204-159.230.

California Institute of Technology: *See—*
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.
Rembaum, Alan, 4,326,008, Cl. 428-403.000.
Caloggero, Anthony J.: *See—*
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.
Campman, Arthur R.; Shibata, George K.; and Cumming, William D., to Hitco. Bias fabric. 4,325,999, Cl. 428-112.000.
Canada Cycle and Motor Company Limited: *See—*
Livernois, John, 4,325,148, Cl. 2-2.000.
Canadian Patents & Development Ltd.: *See—*
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., 4,325,207, Cl. 52-641.000.
Canon Kabushiki Kaisha: *See—*
Kamiya, Osamu; and Sekimura, Nobuyuki, 4,325,608, Cl. 350-165.000.
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.
Canron Inc. (Montreal): *See—*
Valditerra, Sergio, 4,325,306, Cl. 104-2.000.
Cantley, Robert J. Energy management system for refrigeration systems. 4,325,223, Cl. 62-126.000.
Caperton, Charles B. Guide tube for sewer rodding machine. 4,325,206, Cl. 52-108.000.
Capizzi, Amedeo: *See—*
Dal Moro, Anacleto; Pinamonti, Franco; and Capizzi, Amedeo, 4,325,941, Cl. 424-84.000.
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., to Phillips Petroleum Company. Catalyst, method of producing the catalyst, and polymerization process employing the catalyst. 4,325,837, Cl. 252-429.00B.
Carasso, Marino G.: *See—*
Verboom, Johannes J.; and Carasso, Marino G., 4,326,282, Cl. 369-48.000.
Carbo Mediec Inc.: *See—*
Slivenko, Victor; and Bokros, Jack C., 4,325,373, Cl. 128-303.00R.
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., to Heat and Control, Inc. Apparatus for preparing french fried potatoes. 4,325,295, Cl. 99-339.000.
Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Hirt, Manfred, 4,325,589, Cl. 308-101.000.
Carlsen, W. John, to GTE Laboratories Incorporated. Apparatus for connecting optical fibers. 4,325,607, Cl. 350-96.210.
Carpenter, Michael. Flotation mattress. 4,325,152, Cl. 5-451.000.
Carrier Corporation: *See—*
Lang, Richard D.; and Bolton, Theodore S., 4,325,594, Cl. 312-100.000.
Carroll, Charles B.: *See—*
Russell, John P.; and Carroll, Charles B., 4,325,489, Cl. 220-2.200.
Casazza, Annamaria: *See—*
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, 4,325,947, Cl. 424-180.000.
Cassella Aktiengesellschaft: *See—*
Buhler, Ulrich; and Heinrich, Ernst, 4,325,870, Cl. 260-156.000.
Cassinelli, Giueseppe: *See—*
Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
Castoldi, Luigi, to Societa' Castoldi S.p.A. Suction device for jet propulsion units for a watercraft and jet propulsion units comprising the same. 4,325,699, Cl. 440-47.000.
Caterpillar Tractor Co.: *See—*
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., to May & Baker Limited. Cyclopentane derivatives. 4,325,967, Cl. 424-299.000.
Celanese Corporation: *See—*
Wissbrun, Kurt F.; and Ide, Yoshiaki, 4,325,903, Cl. 264-176.00R.
Celotex Corporation, The: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,325,849, Cl. 252-62.000.
Cermak, Jan: *See—*
Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, 4,325,311, Cl. 110-245.000.
Ceskoslovenska akademie ved: *See—*
Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, 4,325,311, Cl. 110-245.000.
Chafetz, Harry; and Lee, Gary D., to Texaco Inc. Process for the manufacture of an alkenylsuccinic anhydride. 4,325,876, Cl. 260-346.740.
Chafetz, Lester: *See—*
Scheinthal, Bernard M.; and Chafetz, Lester, 4,325,908, Cl. 422-61.000.
Chaikin, Petr M.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Chain, Franklin O.; and Myers, John P. Materials handling device. 4,325,666, Cl. 414-24.500.
Chalian, Eduard A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Chamberlin, George P., to Motorola, Inc. Architecture for data processor. 4,326,247, Cl. 364-200.000.
Chambers, Earl W.; and Doglietto, John L. Apparatus for collecting mineral-bearing debris. 4,325,162, Cl. 15-327.00C.
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., to Du Pont de Nemours, E. I., and Company. Durable antisoling coatings for textile filaments. 4,325,857, Cl. 523-412.000.
Chan, David C. K.: *See—*
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,326,077, Cl. 564-211.000.
Chan, Mankin: *See—*
Yen, Teh Fu; and Chan, Mankin, 4,325,433, Cl. 166-273.000.
Chancellor, John D.: *See—*
Holding, David; and Chancellor, John D., 4,325,900, Cl. 264-103.000.
Holding, David; and Chancellor, John D., 4,325,901, Cl. 264-146.000.
Chapman, Harry S., to Kennecott Corporation. Biaxially stressed fluorinated polymer roll cover. 4,325,998, Cl. 428-36.000.
Charlton, Walter T. Solar power building block. 4,326,012, Cl. 429-9.000.
Chase, David O.: *See—*
Iten, Clemens A.; and Chase, David O., 4,325,392, Cl. 132-80.00R.
Chem Systems Inc.: *See—*
Green, Marvin I.; and Gelbein, Abraham P., 4,325,803, Cl. 208-11.0LE.
Chemetron Corporation: *See—*
Students, Peter A., 4,325,720, Cl. 62-35.000.
Chevron Research Company: *See—*
Blanton, William A., Jr., 4,325,926, Cl. 423-244.000.
Kuehler, Christopher W., 4,325,801, Cl. 208-10.000.
Miller, Stephen J., 4,325,805, Cl. 208-58.000.
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,325,800, Cl. 208-8.0LE.
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,326,077, Cl. 564-211.000.
Scott, John W., 4,325,833, Cl. 252-417.000.
Chiang, Nei-Ho, to Yang, Yin-Lung, a part interest. Signal wave loaded pressure oil remote controller and governor. 4,325,671, Cl. 415-43.000.
Chiba, Ryoichi, to Eisai Co., Ltd. Agent for preventing or treating psoriasis. 4,325,965, Cl. 424-284.000.
Christ, Alfred; and Peron, Mario, to Escher Wyss Limited. Mounting for a rotor. 4,325,584, Cl. 308-9.000.
Christensen, Bruce D.: *See—*
Akkerman, Neil H.; and Christensen, Bruce D., 4,325,402, Cl. 137-270.000.
Christo, C. Louis. Valve box assembly. 4,325,405, Cl. 137-371.000.
Chvostal, Paul J.: *See—*
Bartholet, Stephen J.; and Chvostal, Paul J., 4,326,115, Cl. 219-56.100.
Ciba Geigy AG: *See—*
Steiger, Rolf; and Reber, Jean-Francois, 4,326,021, Cl. 430-427.000.
Ciba-Geigy Corporation: *See—*
Gargano, Robert; Perez, Donald E.; and Williams, David K., 4,326,059, Cl. 544-243.000.
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,325,728, Cl. 71-90.000.
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, 4,325,729, Cl. 71-94.000.
Seitz, Karl; Riat, Henri; and Hoegerle, Karl, 4,325,869, Cl. 260-146.00D.
Stockinger, Friedrich· Eldin, Sameer H.; and Lohse, Friedrich, 4,326,069, Cl. 560-1o9.000.
Cibulka, Josef: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Cicci, George B., to International Harvester Company. Method and apparatus for in-field crop harvesting. 4,325,209, Cl. 56-1.000.
Cities Service Company: *See—*
Kunze, Walter A., 4,325,492, Cl. 220-335.000.
Citizen Watch Co., Ltd.: *See—*
Nishikubo, Yasuhiko, 4,326,277, Cl. 368-86.000.
Tanaka, Ryuzo; and Ishigaki, Hisao, 4,326,281, Cl. 368-294.000.
CKD Praha, oborovy podnik: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Clark, Charles E.: *See—*
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.
Clark, Clarence E., Jr.: *See—*
Beimesch, Bruce J.; and Clark, Clarence E., Jr., 4,326,070, Cl. 560-190.000.
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., to General Motors Corporation. Modular occupant restraint system. 4,325,568, Cl. 280-731.000.

Clay, Murray G., to Littelfuse, Inc. Off-centered hour glass shaped coil spring and thermal switch incorporated into same. 4,326,186, Cl. 337-407.000.

Clegg, John E. Reflective beam concentrator. 4,325,612, Cl. 350-432.000.

Clement, Alvin H. Universal signal generator and signal parameter comparator. 4,326,262, Cl. 364-851.000.

Cleminshaw, Douglas R.: *See—*
Urion, Kenard E.; and Cleminshaw, Douglas R., 4,325,176, Cl. 29-450.000.

CMI Corporation: *See—*
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., 4,325,580, Cl. 299-39.000.

Coal Industry (Patents) Limited: *See—*
Evans, John D., 4,325,364, Cl. 128-201.130.

Cockerill: *See—*
Martelee, Ghislain A., 4,325,274, Cl. 81-57.130.

Coffee, Edward C. J.: *See—*
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., 4,325,967, Cl. 424-299.000.

Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Adducts of acrolein and isocyanuric acid. 4,326,057, Cl. 544-221.000.

Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, to Motorola, Inc. Display system for a supervisory control system. 4,326,264, Cl. 364-900.000.

Cole, John N.; and Hettel, David A., to Mead Corporation, The. Method for heat forming hardboard and other types of forming board. 4,325,899, Cl. 264-86.000.

Cole, Willis E.: *See—*
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., 4,325,322, Cl. 118-410.000.

Colegrove, George T.: *See—*
Kang, Kenneth S.; Colegrove, George T.; and Veeder, George T., 4,326,052, Cl. 536-1.000.

Collum, William E., Jr. Surfboard fin. 4,325,154, Cl. 441-74.000.

Colon, Herman; and Maletsky, Albert. Water-activatable hot-melt adhesives. 4,325,851, Cl. 524-83.000.

Colt Industries Operating Corp: *See—*
Bier, Kenneth C.; and Miller, Robert J., 4,325,339, Cl. 123-440.000.

Colvin, David S. Adjustable open-end and box-end wrench. 4,325,275, Cl. 81-77.000.

Combustion Engineering, Inc.: *See—*
Kantesaria, Prabhudas P.; and Matthews, Francis T., 4,325,327, Cl. 122-4.00D.
Klotz, Robert J.; and Stephen, Donald W., 4,325,785, Cl. 376-154.000.
Wohlsen, William D., 4,325,786, Cl. 376-442.000.

Comer, Robert C., to Toro Company, The. Snow thrower. 4,325,195, Cl. 37-43.00D.

Commissariat a l'Energie Atomique: *See—*
Pigeon, Michel; and Saglio, Robert, 4,326,166, Cl. 324-225.000.

Commonwealth Industrial Gases Limited, The: *See—*
Grewar, Lloyd C., 4,325,221, Cl. 62-63.000.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull: *See—*
Lazzari, Jean-Pierre, 4,326,267, Cl. 365-1.000.

Comparetto, John E. Solar heating apparatus. 4,325,358, Cl. 126-432.000.

Compere, Alicia L.: *See—*
Griffith, William L.; Compere, Alicia L.; and Holleman, James W., 4,326,037, Cl. 435-274.000.

Connin, John L.; Hartman, G. William, Jr.; and Schley, Ronald F., to Exxon Research & Engineering Co. Method of and apparatus for facsimile sheet feeding. 4,326,222, Cl. 358-292.000.

Conoco Inc.: *See—*
Dembicki, Harry, Jr.; and Woods, Roger A., 4,325,907, Cl. 422-54.000.

Conrad, Roger N., to Continental Group, Inc., The. Non-detachable ring pull opening device for beverage cans. 4,325,490, Cl. 220-269.000.

Continental Conveyor & Equipment Co.: *See—*
Crowley, John E., Jr., 4,325,717, Cl. 55-290.000.

Continental Group, Inc., The: *See—*
Conrad, Roger N., 4,325,490, Cl. 220-269.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; and Huinink, Heinrich, 4,325,423, Cl. 152-361.00R.

Contri, Robert F., to Sunbeam Corporation. Feedback motor control circuit. 4,326,153, Cl. 318-327.000.

Cook, Russell P. Back strengthening device. 4,325,547, Cl. 272-144.000.

Cooke, Gordon R., to United States of America, Navy. Compass checker. 4,325,246, Cl. 73-1.00E.

Cooper, Gene R.: *See—*
Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, 4,325,161, Cl. 15-304.000.

Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., to Nestor Associates. Self organizing general pattern class separator and identifier. 4,326,259, Cl. 364-715.000.

Cooper, Michael G.; and Sassi, Alessandro P., to Boeing Company, The. Lift control system for aircraft vertical path guidance. 4,326,253, Cl. 364-435.000.

Copes, Anna M., legal representative: *See—*
Graham, David E.; and Copes, Joseph P., deceased, 4,325,973, Cl. 424-320.000.

Copes, Joseph P., deceased: *See—*
Graham, David E.; and Copes, Joseph P., deceased, 4,325,973, Cl. 424-320.000.

Copham, John D.: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,325,849, Cl. 252-62.000.

Corcoran, William H.: *See—*
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.

Cordis Corporation: *See—*
Gold, Philip, 4,325,389, Cl. 128-784.000.

Coren, Gerald. Clip-on protector. 4,326,231, Cl. 361-119.000.

Corl, Paul D.: *See—*
Kino, Gordon S.; Corl, Paul D.; and Grant, Peter M., 4,325,257, Cl. 73-626.000.

Corner, Michael R.; Kemp, Ian; Allbert, Barrie J.; and French, Tom, to Dunlop Limited. Pneumatic tire and wheel rim assemblies. 4,325,422, Cl. 152-352.00R.

Cosserat, Dominique: *See—*
Botton, Roger; and Cosserat, Dominique, 4,325,923, Cl. 423-234.000.

Costanzi, Silvestro; Tessarolo, Francesco; and Ballabio, Adriano, to ANIC S.p.A. Pyrrolidine-ring-containing compositions for use as anti-UV stabilizers in plastics materials. 4,325,864, Cl. 524-104.000.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; and Mena, Walter M., 4,325,909, Cl. 422-63.000.
Wardlaw, Stephen C., 4,325,915, Cl. 422-100.000.

Coulter, Wallace H.; and Mena, Walter M., to Coulter Electronics, Inc. Fluid transfer apparatus. 4,325,909, Cl. 422-63.000.

Coutta, John M.; and VanDusen, Paul A. Surveillance system. 4,326,218, Cl. 358-108.000.

Cox, Ronald W.: *See—*
Mizuhara, Howard; and Cox, Ronald W., 4,325,754, Cl. 148-22.000.

CPC International Inc.: *See—*
Reiners, Robert A., 4,325,882, Cl. 260-412.400.

Cramer, Roger E., to Research Corporation of the University of Hawaii, The. Platinum caffeine chloride anion complex and method. 4,325,950, Cl. 424-245.000.

Crane, Carl J. Aircraft control/guidance display and mechanism for enroute and landing utility. 4,326,189, Cl. 340-27.0NA.

Creton, Claude. Protection device adaptable for vertical blade cutters. 4,325,186, Cl. 30-275.000.

Cropp, Ingo: *See—*
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.

Crowley, John E., Jr., to Continental Conveyor & Equipment Co. Seal protector for air filtering apparatus. 4,325,717, Cl. 55-290.000.

Crowley, Raymond R.; Daniels, Edward P.; and Holtz, Earl B., to Pitney Bowes Inc. Method and system for computing special fees in a parcel postage metering system. 4,325,440, Cl. 177-25.000.

Crown City Plating Co.: *See—*
Donovan, Lawrence P., III; Maguire, Eileen; and Dillard, David A., 4,325,991, Cl. 427-307.000.
Donovan, Lawrence P., III; Maguire, Eileen; and Dillard, David A., 4,325,992, Cl. 427-307.000.

CTS Corporation: *See—*
Zdanys, John, Jr., 4,326,110, Cl. 200-16.00R.

Cucinella, Salvatore: *See—*
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,325,885, Cl. 260-448.00R.

Culp, David W.; and Mastell, Dale P., to MSI Data Corporation. Audio data transmission device with coupling device. 4,326,102, Cl. 179-2.00C.

Cumming, William D.: *See—*
Campman, Arthur R.; Shibata, George K.; and Cumming, William D., 4,325,999, Cl. 428-112.000.

Cummins Engine Company, Inc.: *See—*
Stang, John H.; and Yamaguchi, Hiromasa, 4,325,219, Cl. 60-599.000.

Curran, Patrick A., to Texas Instruments Incorporated. Process for monolithic integration of logic, control, and high voltage interface circuitry. 4,325,180, Cl. 29-571.000.

Curry, Steven A., to International Business Machines Corporation. Work equalizer and loading for a single element printer selection system. 4,325,644, Cl. 400-161.400.

Cymaticolor Corporation: *See—*
McCullion, Francis E., Jr., 4,325,631, Cl. 355-77.000.

Czernik, Daniel E.; and McDowell, Donald J., to Felt Products Mfg. Co. Erosion resistant gasket. 4,325,559, Cl. 277-235.00B.

D'Addio, Douglas J.: *See—*
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Popplewell, James M.; and Dempsey, Martin H., 4,325,746, Cl. 134-10.000.

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de Paul, Michel V.: *See—*
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DePoorter, Lieven L. Modular art wall systems. 4,325,177, Cl. 29-458.000.

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DeSeyn, Mary K., to Eastman Kodak Company. Spectral sensitization of photographic emulsions. 4,326,023, Cl. 430-550.000.

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De Bliquy, Michael C.; and Nikolic, Branko, 4,325,648, Cl. 403-218.000.

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Dewson, Alan G.: *See—*
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Dey, Arabinda N., to Duracell International Inc. High temperature organic electrolyte cells. 4,326,014, Cl. 429-48.000.

DeZurik, Ted E. Interior air conditioner cover. 4,325,229, Cl. 62-262.000.

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Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas. 4,326,074, Cl. 564-47.000.

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Diamond Shamrock Corporation: *See—*
El-Sayed, Refaat M., 4,326,030, Cl. 435-144.000.

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Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, to Lingner and Fischer GmbH. Adhesives. 4,325,855, Cl. 524-219.000.

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Diesel Kiki Company, Limited: *See—*
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Dieter, Norman H., Jr.; and Peterhoff, Edward, to Micro-Acoustics Corporation. Stereo phonograph cartridge. 4,326,285, Cl. 369-137.000.

Dietz, Milton S., to Polaroid Corporation. Apparatus for varying the spectral filter over the photocell as a function of blade position. 4,325,616, Cl. 354-27.000.

Dietz, Richard E.: *See—*
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DiGiulio, Adolph V.; and Bauer, Jack N., to Atlantic Richfield Company. Fire-retardant monocarboxylic acid copolymers. 4,326,044, Cl. 521-147.000.

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Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.

Dirkes, James V., to Rapid Engineering Inc. Internal recirculation device. 4,325,352, Cl. 126-110.00A.

Divish, Dale J.; and Driggs, Harvey W. Spatula scraper attachment for cooking grille. 4,325,158, Cl. 15-236.00R.

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Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, 4,325,311, Cl. 110-245.000.

Docherty, William G.; and Stegmaier, Alys J., to Durisol Materials Limited. Acoustical barrier. 4,325,457, Cl. 181-210.000.

Doglietto, John L.: *See—*
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Donald L. Morton & Associates: *See—*
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Douglas, George H.: *See—*
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Fazio, Michael J., 4,326,067, Cl. 548-347.000.
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Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, to Anic S.p.A. Method for preparation of oligomeric iminic derivatives of aluminum. 4,325,885, Cl. 260-448.00R.

Dreher, George L., to Beloit Corporation. Combined size press and breaker stack and method. 4,325,784, Cl. 162-135.000.
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Driscoll, Mark; and Spector, George. Plastic ice cube. 4,325,230, Cl. 62-293.000.
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., to Du Pont de Nemours, E. I., and Company. Process for producing a mixture containing cyclohexanol and cyclohexanone from cyclohexane. 4,326,084, Cl. 568-360.000.
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Vigante, Brigita A.; Ozol, Yan-Voldemar Y.; Vitolin, Rasma O.; Silenietse, Gunta O.; Kimenis, Agris A.; and Dubur, Gunar Y., 4,326,064, Cl. 546-322.000.
Duerst, Thomas. Bow sight. 4,325,190, Cl. 33-265.000.
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., to Lever Brothers Company. Detergent compositions. 4,325,829, Cl. 252-109.000.
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Bauer, Richard D., 4,326,010, Cl. 428-483.000.
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., 4,325,857, Cl. 523-412.000.
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Jacobson, Howard W., 4,325,740, Cl. 106-300.000.
Willis, Frank M., 4,325,682, Cl. 418-48.000.
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E. Braude (London) Limited: *See—*
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Eastman Kodak Company: *See—*
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DeSeyn, Mary K., 4,326,023, Cl. 430-550.000.
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Irick, Gether, Jr.; and Kelly, Charles A., 4,326,065, Cl. 548-143.000.
McCombs, Charles A., 4,325,878, Cl. 260-397.100.
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Eberle, Walter; and Albert, Winfried, to Boehringer Mannheim GmbH. Process for the recovery of α-2-SB-glycoprotein. 4,325,867, Cl. 260-112.00B.
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Triazolyl coumarin compounds, processes for their preparation and their use as whiteners and laser dyestuffs. 4,326,066, Cl. 548-256.000.
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Econo-Therm Energy Systems Corporation: *See—*
Nobles, Elon J., 4,325,171, Cl. 29-157.30C.
Eddy, William R., to Phillips Petroleum Company. Apparatus for merging articles from two conveyor lines into one conveyor line. 4,325,476, Cl. 198-448.000.
Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, to Owens-Illinois, Inc. Double jawed shaping tool for glass vials. 4,325,726, Cl. 65-298.000.
Edwin Cooper, Inc.: *See—*
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Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Eheim, Franz; and Hofer, Gerald, to Robert Bosch GmbH. RPM Governor for a fuel injection pump. 4,325,337, Cl. 123-357.000.
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Eisai Co., Ltd.: *See—*
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Elliott, Charles A., to RCA Corporation. Video disc player having turntable assist apparatus. 4,326,284, Cl. 369-77.000.
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., to P T Components, Inc. Bearing take-up apparatus. 4,325,588, Cl. 308-59.000.
El-Sayed, Refaat M., to Diamond Shamrock Corporation. Process for the production of pyruvic acid and citric acid. 4,326,030, Cl. 435-144.000.
Eltra Corporation: *See—*
Kern, Calvin V.; and Zepp, Lawrence P., 4,325,700, Cl. 440-61.000.
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Kunz, Bernard L., 4,325,508, Cl. 236-92.00B.
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Bartholic, David B.; and Byrne, John W., 4,325,817, Cl. 208-164.000.
Brown, Stanley M.; Reagan, William J.; and Woltermann, Gerald M., 4,325,813, Cl. 208-120.000.
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Enokizono, Takatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for displaying characters. 4,326,201, Cl. 340-717.000.
Epstein, Ronald A.; and Mink, Robert I., to Stauffer Chemical Company. Novel titanium halide containing catalyst. 4,325,836, Cl. 252-429.00B.
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Swindells, Richard; and Fredette, Maurice C. J., 4,325,934, Cl. 423-478.000.
Erfurth, Frank R., to Morrison-Knudsen Co., Inc. Controlled-discharge door for particulate materials and liquids. 4,325,308, Cl. 105-280.000.
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Erickson, Frederick L. Dual-expansion internal combustion cycle and engine. 4,325,331, Cl. 123-42.000.
Erin, Tim, to Mead Corporation, The. Density control system for jet drop applicator. 4,326,204, Cl. 346-75.000.
Escalera, Saul J., to Sherex Chemical Company, Inc. Amine oxide promoters for froth flotation of mineral ores. 4,325,821, Cl. 209-166.000.
Escher Wyss Limited: *See—*
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Esselte Pendaflex Corp.: *See—*
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Evans, Alyce D.; and Hilty, John R., to Testco, Inc. Furnace induction system. 4,325,691, Cl. 431-190.000.

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Evans, Mark, to Bartos, Henry. Tubular key cutting machine. 4,325,662, Cl. 409-82.000.

Everett, Gary L.; and Hu, William C., to Atlantic Richfield Company. Process for producing lubricating oils and white oils. 4,325,804, Cl. 208-58.000.

Evin, Jean, to Societe Logilift S.A.R.L. Proximity detector. 4,326,197, Cl. 340-561.000.

Ewald, Ronald F., to Knight Engineering & Molding Co. Child-resistant spray through cover. 4,325,497, Cl. 222-153.000.

Excelermatic Inc.: *See—*
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Johnson, Burnett H., 4,325,860, Cl. 324-155.000.
Metrailer, William J., 4,325,815, Cl. 208-127.000.
Worley, Arthur C., 4,325,916, Cl. 422-197.000.

Fabrig, Paul, to Womako Maschinenkonstrucktionen GmbH. Method and apparatus for aligning stacked paper sheets or the like. 4,325,545, Cl. 271-221.000.

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Fang, Frank F.; and Sai-Halasz, George A., to International Business Machines Corporation. Semiconductor inversion layer transistor. 4,326,208, Cl. 357-16.000.

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Farina, Peter R.; and Grattan, James A., to Baker Instruments Corporation. Process for preparation of folic acid derivatives. 4,326,060, Cl. 544-258.000.

Farkas, Otto: *See—*
Koroladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.

Farmitalia Carlo Erba S.p.A.: *See—*
Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
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Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.

Faude, Rude, to BSG Schalttechnik GmbH & Co. KG. Locking apparatus for preventing unauthorized access or actions. 4,326,124, Cl. 235-382.000.

Faudel, Gerald B.: *See—*
Haas, Frank C.; and Faudel, Gerald B., 4,325,925, Cl. 423-239.000.

Fazio, Michael J., to Dow Chemical Company, The. Process for making N-(2-aminoethyl)amides. 4,326,067, Cl. 548-347.000.

Feeser, Larry R., to Procter & Gamble Company, The. Flip top, reclosable carton. 4,325,482, Cl. 206-625.000.

Fehr, Werner; and Schmidt, Klaus Dieter, to BBC Brown, Boveri & Company, Ltd. Test circuit for high voltage apparatus. 4,326,167, Cl. 324-415.000.

Fehrenbach, Siegfried, to Robert Bosch GmbH. Air valve for a fuel supply system. 4,325,349, Cl. 123-587.000.

Feistel, Horst: *See—*
Bouricius, Willard G.; and Feistel, Horst, 4,326,098, Cl. 178-22.080.

Feldman, Steven, to AMP Incorporated. Phone plug. 4,325,599, Cl. 339-103.00R.

Feldmann, Hellmuth: *See—*
Tiletschke, Lothar; and Feldmann, Hellmuth, 4,325,533, Cl. 249-188.000.

Feldstein, Nathan. Catalytic promoters in electroless plating catalysts added prior to a colloidal nucleation process. 4,325,983, Cl. 427-98.000.

Felt Products Mfg. Co.: *See—*
Czernik, Daniel E.; and McDowell, Donald J., 4,325,559, Cl. 277-235.00B.

Fenderson, Gerald L.; and Skinner, Mitchell A., to Bell Telephone Laboratories, Incorporated. Adaptive decision level circuit. 4,326,169, Cl. 328-162.000.

Fendt, Alfons: *See—*
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.

Fenne, Ivor; and Andrews, Richard J., to Lucas Industries Limited. Liquid fuel pumping apparatus. 4,325,676, Cl. 417-206.000.

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Ferrari, Gaetano, to Indracos S.r.l. Device for cleaning rotary drums, in particular for rotary drum filters. 4,325,395, Cl. 134-152.000.

Ferri, Romano I., to Microphase Corporation. Microwave backdiode microcircuits and method of making. 4,326,180, Cl. 333-246.000.

Ferrier, Donald R., to MacDermid Incorporated. Electroless copper deposition solutions with hypophosphite reducing agent. 4,325,990, Cl. 427-305.000.

Fettweis, Alfred, to Siemens Aktiengesellschaft. Method and apparatus for frequency division multiplex system. 4,326,288, Cl. 370-70.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Lynch, Larry W., 4,325,266, Cl. 74-482.000.

Fiber Glass Systems, Inc.: *See—*
Michael, Vesta F., 4,325,766, Cl. 156-171.000.

Fibinger, Vratislav: *See—*
Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, 4,325,311, Cl. 110-245.000.

Figgie International Inc.: *See—*
Barker, Theodore L., 4,325,208, Cl. 53-448.000.

Filtrol Corporation: *See—*
Lim, John; and Brady, Michael, 4,325,845, Cl. 252-455.00Z.
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., 4,325,847, Cl. 252-455.00Z.

Filz, Charles J.: *See—*
Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,325,715, Cl. 55-158.000.

Finnegan, Charles. Combined screwdriver and boring apparatus. 4,325,153, Cl. 7-165.000.

Firestone Tire & Rubber Company, The: *See—*
Kang, Jung W., 4,325,884, Cl. 260-439.00R.

Fischbeck, Kenneth H.; and Schnarr, Marcus M., to Xerox Corporation. Coincidence fluid displacement and velocity expression of droplet. 4,326,205, Cl. 346-140.00R.

Fischer, Carole M., heir: *See—*
Fischer, Frederick C., deceased; and Fischer, Carole M., heir, 4,325,443, Cl. 180-6.540.

Fischer, Frederick C., deceased; and by Fischer, Carole M., heir. Turning assistance for tracked vehicles. 4,325,443, Cl. 180-6.540.

Fish, Leonard A., to Avco Investment Management Corporation. Single-bill currency dispenser. 4,325,494, Cl. 221-13.000.

Flies, William P., to Datakey, Inc. Microelectronic memory key with receptacle and systems therefor. 4,326,125, Cl. 235-443.000.

Fort, Ivan: *See—*
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.

Fort Lock Corporation: *See—*
Scherbing, Frank J., 4,325,238, Cl. 70-18.000.

Fortier, Joseph R.; and Klett, John L., to General Motors Corporation. Die clamp arrangement. 4,325,300, Cl. 100-295.000.

Fortier, Richard C.: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,325,686, Cl. 425-371.000.

Fory, Werner: *See—*
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, 4,325,729, Cl. 71-94.000.

Foss, Stephen D., to General Electric Company. Method for determining gaseous contaminants in vapor cooled transformers. 4,325,247, Cl. 73-19.000.

Foster, Charles H., to Eastman Kodak Company. Process for conversion of sterol i-methyl ethers to sterols. 4,325,880, Cl. 260-397.200.

Foster, Francis S., to Ontario Cancer Institute. Conical transducer ultrasonic scanning. 4,325,258, Cl. 73-642.000.

Foster, Leslie W.; and Tillotson, Henry B., to Toro Company, The. Compression relief adapter. 4,326,145, Cl. 313-120.000.

Foster, Stephen R., to Baker CAC, Inc. Actuator mechanism for a rotary valve or the like. 4,325,535, Cl. 251-58.000.

Fox, Rita T.: *See—*
Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., 4,326,076, Cl. 564-156.000.

Fraize, John E.: *See—*
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Franchi, Giuliano: *See—*
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, 4,325,947, Cl. 424-180.000.

Frank, Karl: *See—*
Barkow, Helmut; and Frank, Karl, 4,326,108, Cl. 179-164.000.

Frankhouse, Thomas J., to Teleflex Incorporated. Motion transmitting remote control assembly. 4,325,904, Cl. 264-242.000.

Franks, Robert E.: *See—*
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,251, Cl. 364-200.000.
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,266, Cl. 364-900.000.
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Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., to Barber-Colman Company. Method and apparatus for checking a gear. 4,325,189, Cl. 33-179.50B.

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Swindells, Richard; and Fredette, Maurice C. J., 4,325,934, Cl. 423-478.000.

Freeman, James W., to Naylor, Neal & Uilkema, a part interest. Freight handling means. 4,325,667, Cl. 414-139.000.

Freiman, Efim A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.

Freimark, Ronald J.: *See*—
Shaw, Mark L.; and Freimark, Ronald J., 4,326,171, Cl. 330-256.000.
French, Tom: *See*—
Corner, Michael R.; Kemp, Ian; Allbert, Barrie J.; and French, Tom, 4,325,422, Cl. 152-352.00R.
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., to Emerson Electric Co. Pulsed DC constant current magnetic flowmeter. 4,325,261, Cl. 73-861.120.
Frick Company: *See*—
Schaeffer, Bruce S., 4,325,226, Cl. 62-238.600.
Frick, Roger L., to Rosemount Inc. Current to pressure converter apparatus. 4,325,399, Cl. 137-85.000.
Friedmann, Oswald: *See*—
Steeg, Klaus; and Friedmann, Oswald, 4,325,472, Cl. 192-48.100.
Friedrich, Robert; and Schmidt, Peter, to International Standard Electric Corporation. Arrangement for making color-picture tubes. 4,325,613, Cl. 354-1.000.
Fries, James E. Focusing solar heat collector. 4,325,359, Cl. 126-438.000.
Fritts, Robert W.: *See*—
Achten, David J.; and Fritts, Robert W., 4,325,197, Cl. 40-610.000.
Froberg, Magnus L., to Owens-Corning Fiberglas Corporation. Method for making glass. 4,325,724, Cl. 65-121.000.
Frolich, Karl-Werner: *See*—
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, 4,325,517, Cl. 242-18.100.
Fromm, Ingrid; and Lagger, Helmut, to Siemens Aktiengesellschaft. Arrangement for signaling in a voice communication system with optically fed components. 4,326,298, Cl. 455-606.000.
Fuchs, Francis J. Energy conversion apparatus. 4,325,354, Cl. 126-247.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, to Bayer Aktiengesellschaft. 3-Bromo-4-fluorobenzyl derivatives. 4,326,087, Cl. 568-631.000.
Fuchs, Rainer: *See*—
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Fuji Photo Film Co., Ltd.: *See*—
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, 4,326,024, Cl. 430-557.000.
Fujieda, Mamoru: *See*—
Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, 4,325,341, Cl. 123-472.000.
Fujii, Akio: *See*—
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Fujikura Cable Works, Limited, The: *See*—
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, 4,325,750, Cl. 148-6.14R.
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, to Research Association for Residual Oil Processing. Process for cracking heavy hydrocarbons into light oils and producing hydrogen. 4,325,812, Cl. 208-119.000.
Fujimoto, Hideki: *See*—
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.
Fujimoto, Masami, to Yamamura Glass Kabushiki Kaisha. Apparatus for producing glass bottles. 4,325,725, Cl. 65-230.000.
Fujioka, Yasuhiro: *See*—
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Fujita, Shigeru, to Toshiba Kikai Kabushiki Kaisha. Apparatus for controlling plasticizing process of in-line screw-type injection molding machine. 4,326,253, Cl. 364-476.000.
Fujitsu Fanuc Ltd.: *See*—
Sata, Toshio; and Matsushima, Katsumori, 4,326,257, Cl. 364-508.000.
Fujitsu Limited: *See*—
Shirai, Kazunari; and Tanaka, Izumi, 4,326,213, Cl. 357-51.000.
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, to Hitachi, Ltd. Pressure-responsive ignition timing controller for a supercharged internal combustion engine. 4,325,338, Cl. 123-407.000.
Fukushima, Mamoru: *See*—
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Funado, Akira: *See*—
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.
Funato, Hiroyoshi, to Ricoh Co., Ltd. Optical scanning device. 4,325,601, Cl. 350-3.710.
Funderburg, Donald R.: *See*—
Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R., 4,325,571, Cl. 285-177.000.
Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R. Tube union and method for forming a joint between adjacent end portions of malleable tubing. 4,325,571, Cl. 285-177.000.
Furuichi, Shuhei: *See*—
Hotta, Mitsuhiko; Furuichi, Shuhei; and Shigihara, Takanori, 4,326,274, Cl. 367-118.000.
Furumoto, Takayuki, to Hitachi, Ltd. Frequency discriminating circuit. 4,326,256, Cl. 364-484.000.
Furuya, Kiichi: *See*—
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See*—
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,325,196, Cl. 40-2.200.
G. Siempelkamp GmbH & Co.: *See*—
Pesch, Jurgen, 4,325,898, Cl. 264-40.500.
G. T. Corporation: *See*—
Green, Charles J., 4,325,398, Cl. 137-39.000.
Gabellieri, Rodolfo, to Interox. Process for the culture of aerobic microorganisms. 4,326,035, Cl. 435-247.000.
Gable, Derek J., to Bosley, Denis V., a part interest. Locking mechanism. 4,325,240, Cl. 70-284.000.
GAF Corporation: *See*—
Graham, David E.; and Copes, Joseph P., deceased, 4,325,973, Cl. 424-320.000.
Sachs, Peter R.; and Sears, James W., 4,326,001, Cl. 428-161.000.
Gaines, Ethel M.: *See*—
Gaines, Frederick W., Jr.; and Gaines, Ethel M., 4,325,263, Cl. 73-864.550.
Gaines, Frederick W., Jr.; and Gaines, Ethel M. Metal sampling apparatus. 4,325,263, Cl. 73-864.550.
Galdun, Daniel J.: *See*—
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.
Galfo, Christopher H.; and Nalamwar, Ashok L., to Fairchild Camera & Instrument Corp. Plasma passivation technique for the prevention of post-etch corrosion of plasma-etched aluminum films. 4,325,984, Cl. 427-38.000.
Gallo-Torres, Hugo: *See*—
Holland, George W.; Rosen, Perry; and Gallo-Torres, Hugo, 4,325,970, Cl. 424-311.000.
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, to Societe Nationale Industrielle Aerospatiale; and Office National d'Etudes etc. Blade profile for rotary wing of an aircraft. 4,325,675, Cl. 416-223.00R.
Garber, Jan W.: *See*—
Buckles, Richard G.; and Garber, Jan W., 4,326,025, Cl. 435-2.000.
Gardiner, Kenneth W.: *See*—
Swidler, Ronald; and Gardiner, Kenneth W., 4,325,627, Cl. 355-10.000.
Gardner, Leland V., to Hughes Aircraft Company. Apparatus for determining of angle of incidence of electromagnetic energy. 4,325,633, Cl. 356-141.000.
Gargano, Robert; Perez, Donald E.; and Williams, David K., to Ciba-Geigy Corporation. Process for the production of thiophosphoric acid esters. 4,326,059, Cl. 544-243.000.
Garnett, David M. Bearing assemblies for use in conveyor roller. 4,325,473, Cl. 193-35.00R.
Garrett, Arthur E. Butterfly valve with self locking disc. 4,325,536, Cl. 251-308.000.
Garrison, Robert L.: *See*—
Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., 4,326,149, Cl. 315-289.000.
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Multilayer identification cards with relief-like surface. 4,325,196, Cl. 40-2.200.
Gaylard, Phyllis S.: *See*—
Julian, Ernest L.; and Gaylard, Phyllis S., 4,325,668, Cl. 414-546.000.
Gehrmann, Gerd-Peter, to Von Roll AG. Apparatus for cleaning a filter press. 4,325,396, Cl. 134-181.000.
Geisen, Karl: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,325,963, Cl. 424-274.000.
Gelbein, Abraham P.: *See*—
Green, Marvin I.; and Gelbein, Abraham P., 4,325,803, Cl. 208-11.0LE.
Genco, Joseph M.: *See*—
Rosenberg, Harvey S.; and Genco, Joseph M., 4,325,713, Cl. 55-73.000.
General Battery Corporation: *See*—
Bevan, William G.; and Sterling, Larry L., 4,325,429, Cl. 165-80.00E.
General Electric Company: *See*—
Allen, Benjamin F., 4,326,181, Cl. 336-12.000.
Foss, Stephen D., 4,325,247, Cl. 73-19.000.
Given, Arthur P.; and O'Meara, Michael F., 4,326,263, Cl. 364-900.000.
Gordy, Lester A.; and Poff, David A., 4,325,799, Cl. 204-297.00W.
Ludington, David N., 4,326,269, Cl. 365-189.000.
McHugh, James D., 4,325,583, Cl. 308-9.000.
Pruehs, Leslie L., 4,325,178, Cl. 29-458.000.
Tefft, Edward G.; and Tuft, Bernard R., 4,325,182, Cl. 29-583.000.
Toma, Daniel N., 4,325,234, Cl. 68-133.000.
Will, Fritz G., 4,326,017, Cl. 429-228.000.
General Motors Corporation: *See*—
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.
Fortier, Joseph R.; and Klett, John L., 4,325,300, Cl. 100-295.000.
Hall, Beuford C., Jr., 4,325,673, Cl. 415-113.000.

Iafret, John E., 4,325,525, Cl. 248-27.300.
Jandeska, William F., Jr.; and Netherton, Charles F., 4,325,757, Cl. 148-103.000.
Nestor, Charles R., 4,325,600, Cl. 339-116.00C.
Schuster, David A., 4,325,471, Cl. 192-85.0AA.
Winchell, Frank J., 4,325,565, Cl. 280-282.000.

Georgia Oil and Gas Company: *See*—
Strumskis, Louis, 4,325,787, Cl. 202-106.000.

Gerigk, Gunter: *See*—
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, 4,325,413, Cl. 138-109.000.

Gerling, John E.; and O'Meara, John P., to Gerling-Moore, Inc. Apparatus for microwave roasting of coffee beans. 4,326,114, Cl. 219-10.55A.

Gerling-Moore, Inc.: *See*—
Gerling, John E.; and O'Meara, John P., 4,326,114, Cl. 219-10.55A.

Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, to Ortho Diagnostic Systems Inc. Automated detection of platelets and reticulocytes in whole blood. 4,325,706, Cl. 23-230.00B.

Gerth, Howard L.: *See*—
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.

Gevipi A.G.: *See*—
Uhlmann, Joachim, 4,325,403, Cl. 137-315.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Plevak, Lubomir; and Weirich, Walter, 4,325,659, Cl. 405-299.000.

Geyer, Robert P.; and Herman, Frederick L., to Air Products and Chemicals, Inc. Perfluorinated N,N-dimethyl cyclohexylmethylamine emulsions. 4,325,972, Cl. 424-325.000.

Gibbons, James. Opener for split ring key holder. 4,325,273, Cl. 81-3.00R.

Gillette, Donald J.; Hajek, Bedrich; and Seales, David, to Electrostatic Equipment Corporation. Zipper chain coater. 4,325,982, Cl. 427-32.000.

Girguis, Sobhy L., to Uni-Cardan AG. Constant velocity universal joint. 4,325,232, Cl. 64-21.000.

Given, Arthur P.; and O'Meara, Michael F., to General Electric Company. Method and apparatus for controlling a plurality of like equipments. 4,326,263, Cl. 364-900.000.

Glasheen, Michael O. Manipulative toy. 4,325,552, Cl. 273-153.00P.

Glenn, William E., to New York Institute of Technology. Ultrasonic scanning head with reduced geometrical distortion. 4,325,381, Cl. 128-660.000.

Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, to U.S. Philips Corporation. Method of manufacturing a color television display tube. 4,325,166, Cl. 29-25.150.

Godsey, Ernest E., to Burr-Brown Research Corp. Interrupt system and method. 4,326,249, Cl. 364-200.000.

Godtfredsen, Wagn O.; and von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). 6-Amidinopenicillanic acid derivatives including the radical of a β-lactamase inhibitor. 4,325,960, Cl. 424-270.000.

Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., to United Technologies Corporation. Hot corrosion resistant coatings. 4,326,011, Cl. 428-641.000.

Goedert, Ferdinand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.

Goffredi, Albert S.: *See*—
Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.

Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, to Brennstoffinstitut Freiberg. Method for the operation of gasification plants for pulverized fuels. 4,325,709, Cl. 48-197.00R.

Gold, Philip, to Cordis Corporation. Tip assembly for a carbon fiber implantable lead. 4,325,389, Cl. 128-784.000.

Golda, Eugene; and Wilkes, Alan, to Polychrome Corporation. Method of making positive acting diazo lithographic printing plate. 4,326,020, Cl. 430-302.000.

Golestaneh, Ahmad A., to United States of America, Energy. Solid state engine with alternating motion. 4,325,217, Cl. 60-527.000.

Gonczy, John D.: *See*—
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., 4,325,530, Cl. 248-317.000.

Gonmori, Makoto: *See*—
Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, 4,325,629, Cl. 355-27.000.

Goodyear Tire & Rubber Company, The: *See*—
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.

Gordon G. Miller & Associates, Inc.: *See*—
Miller, Gordon G., Jr., 4,325,415, Cl. 141-1.000.

Gordy, Lester A.; and Poff, David A., to General Electric Company. Formation apparatus for electrolytic cell. 4,325,799, Cl. 204-297.00W.

Gotoh, Osamu: *See*—
Abe, Yoshiharu; Gotoh, Osamu; and Takagi, Akinobu, 4,325,348, Cl. 123-571.000.

Gouzos, John. Device for small animal escape from a pool. 4,325,462, Cl. 182-93.000.

Gowdy, Hugh W.; and Fenton, Donald M., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams. 4,325,936, Cl. 423-573.00R.

Graco Metal Products, Inc.: *See*—
Borucki, Robert L., 4,325,578, Cl. 297-281.000.

Graham, Charles: *See*—
Hosterman, Harry L., 4,326,123, Cl. 235-380.000.

Graham, David E.; and Copes, Joseph P., deceased (by Copes, Anna M., legal representative), to GAF Corporation. Hydroxyalkyl amides as fungicides to eumycotina in phanerogamia plant life. 4,325,973, Cl. 424-320.000.

Graham, Donald C.: *See*—
Lewis, Robert R.; and Graham, Donald C., 4,326,154, Cl. 318-376.000.

Graham, Thomas S., to Tom Graham & Associates. Wastewater treatment system. 4,325,823, Cl. 210-86.000.

Grant, Peter M.: *See*—
Kino, Gordon S.; Corl, Paul D.; and Grant, Peter M., 4,325,257, Cl. 73-626.000.

Grattan, James A.: *See*—
Farina, Peter R.; and Grattan, James A., 4,326,060, Cl. 544-258.000.

Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., to Universal Precision Machining Co. Method for heat sealing. 4,325,767, Cl. 156-196.000.

Graves, Vernard L.: *See*—
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.

Grebe, John C., Jr.: *See*—
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., 4,325,261, Cl. 73-861.120.

Green, Charles J., to G. T. Corporation. Safety and venting valves for fuel tanks carried on vehicles. 4,325,398, Cl. 137-39.000.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Kewanee Industries, Inc. Anti-microbial, cosmetic and water-treating ionene polymeric compounds. 4,325,940, Cl. 424-70.000.

Green, Marvin I.; and Gelbein, Abraham P., to Chem Systems Inc. Process for hydrogenation/extraction of organics contained in rock. 4,325,803, Cl. 208-11.0LE.

Greene, Peter R.: *See*—
McMahon, Thomas A.; and Greene, Peter R., 4,325,546, Cl. 272-3.000.

Grewar, Lloyd C., to Commonwealth Industrial Gases Limited, The. Method and apparatus for reducing the temperature of articles. 4,325,221, Cl. 62-63.000.

Griebeler, Elmer L. Shockwave probe. 4,326,155, Cl. 318-576.000.

Griesshaber, Karl H., to Ampex Corporation. Digital error measuring circuit for shading and registration errors in television cameras. 4,326,219, Cl. 358-163.000.

Griffey, Deborah L.: *See*—
DeCanto, Joseph F.; and Griffey, Deborah L., 4,325,556, Cl. 273-393.000.

Griffith, William L.; Compere, Alicia L.; and Holleman, James W., to United States of America, Energy. Enzymatic method for improving the injectability of polysaccharides. 4,326,037, Cl. 435-274.000.

Grimes, Donald L., to Polaroid Corporation. Exposure control system with shutter operation controlled by a microcomputer. 4,325,614, Cl. 354-23.00D.

Groenig, Robert E. Fork lift. 4,325,442, Cl. 180-6.480.

Grogler, Gerhard, to Bayer Aktiengesellschaft. Isocyanatoaryl sulfonic acid esters. 4,325,887, Cl. 260-456.00P.

Grohmann, Karel: *See*—
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.

Gross, Benjamin, to Mobil Oil Corporation. Catalytic cracking process utilizing a copper chromite oxidation catalyst. 4,325,814, Cl. 208-120.000.

Gross, Glenn M., to Norlin Industries, Inc. Linear piecewise waveform generator for an electronic musical instrument. 4,326,260, Cl. 364-718.000.

Grosshauser, Heinrich K., to Koenig & Bauer AG. Paper web shifting apparatus. 4,325,301, Cl. 101-217.000.

Grovag Grossventiltechnik A.G.: *See*—
Squirrell, Anton F., 4,325,411, Cl. 137-601.000.

Grove, Leslie H. Process for the production of organic fuel. 4,326,032, Cl. 435-148.000.

Grunewald, Gerhard; and Kriebel, Manfred, to Metallgesellschaft Aktiengesellschaft. Apparatus for regenerating absorbent and method of operating the apparatus. 4,325,782, Cl. 159-47.00R.

Grunewald, Peter; and Sprafke, Uwe, to Wegman & Co. GmbH. Trunnion bearing in armored housing. 4,325,284, Cl. 89-37.00E.

GTE Automatic Electric Labs Inc.: *See*—
Oehrig, Kenneth H., 4,326,103, Cl. 179-6.30R.

GTE Laboratories Incorporated: *See*—
Carlsen, W. John, 4,325,607, Cl. 350-96.210.

GTE Products Corporation: *See*—
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.
Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., 4,326,242, Cl. 362-11.000.
Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., 4,325,771, Cl. 156-261.000.
Mizuhara, Howard; and Cox, Ronald W., 4,325,754, Cl. 148-22.000.
Shaffer, John W.; and Broadt, David R., 4,326,240, Cl. 362-11.000.
Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., 4,326,149, Cl. 315-289.000.

Gubitose, Nicholas F., to RCA Corporation. Apparatus for transferring pure abrasive material from one hopper to another. 4,325,419, Cl. 141-302.000.

Gueguin, Michel, to QIT-Fer et Titane du Quebec, Inc. Method to oxidize Ti^{+3} during the sulfuric acid digestion of titaniferous slags. 4,325,920, Cl. 423-82.000.

Guerit, Pierre: *See*—
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Guertin, Jacques P.: *See*—
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Gulf Oil Corporation: *See*—
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,325,853, Cl. 524-272.000.

Gulf & Western Manufacturing Company: *See*—
Muzzell, Stephen E., 4,325,542, Cl. 267-85.000.

Gurian, Martin E., to Burlington Industries, Inc. Soft luggage construction. 4,325,469, Cl. 190-53.000.

Guth, Werner; Wolfer, Peter; Dahler, Hanspeter; and Calderara, Reto, to Kistler Instrumente AG. Piezoelectric acceleration pick-up. 4,326,143, Cl. 310-329.000.

Guthrie, Dale H., to REB Manufacturing, Inc. Adjustable wheelchair holding device. 4,325,576, Cl. 296-65.00R.

H. A. Schlatter AG: *See*—
Richter, Hans, 4,325,639, Cl. 356-376.000.

Haas, Frank C.; and Faudel, Gerald B., to Tosco Corporation. Method for the removal of nitric oxide from gas streams. 4,325,925, Cl. 423-239.000.

Hacha, Thomas H.: *See*—
Selover, Theodore B., Jr.; and Hacha, Thomas H., 4,326,016, Cl. 429-184.000.

Hafner, Karl E.: *See*—
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Hafner, Udo: *See*—
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Haghiri-Tehrani, Yahya: *See*—
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,325,196, Cl. 40-2.200.

Hajek, Bedrich: *See*—
Gillette, Donald J.; Hajek, Bedrich; and Seales, David, 4,325,982, Cl. 427-32.000.

Halcon SD Group, Inc., The: *See*—
Jacobson, Stephen E., 4,325,874, Cl. 260-340.200.

Hale, John M.; and Weber, Eugen, to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive. Membrane mounting method and membrane-enclosed amperometric cell. 4,325,797, Cl. 204-195.00P.

Hall, Beuford C., Jr., to General Motors Corporation. Variable vane seal. 4,325,673, Cl. 415-113.000.

Hallenbeck, Victor L., to B. F. Goodrich Company, The. Inside tire paint. 4,325,852, Cl. 523-334.000.

Halmann, Martin M.: *See*—
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.

Hamacher, Thomas L.: *See*—
Salim, Massoud A.; and Hamacher, Thomas L., 4,325,205, Cl. 52-79.100.

Hamajima, Shigemitsu: *See*—
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,325,313, Cl. 112-103.000.

Hammann, Ingeborg: *See*—
Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,325,948, Cl. 424-200.000.

Hammerstrom, Knut: *See*—
Wust, Alfredo; and Hammerstrom, Knut, 4,325,789, Cl. 203-67.000.

Hammond, Donald F.: *See*—
Janovick, Michael; Hammond, Donald F.; and Harvey, Winston, 4,325,421, Cl. 144-326.00R.

Hammond, Grover M. Collapsible outdoor cooking apparatus. 4,325,294, Cl. 99-337.000.

Hankey, James H. Cable tester with first and second interengaging test modules. 4,326,162, Cl. 324-51.000.

Hansen, Rainer: *See*—
Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, 4,325,268, Cl. 74-492.000.

Hansen, W. Peter: *See*—
Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.
Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, 4,325,483, Cl. 209-3.100.

Hardy, Bruce N., to Silver Street, Incorporated. Device for deadening drumheads. 4,325,280, Cl. 84-411.00M.

Hardy, Bruce N., to Silver Street, Incorporated. Drumhead ring reducer. 4,325,281, Cl. 84-411.00M.

Harms, Wolfgang; Wunderlish, Klaus; and von Oertzen, Klaus, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 4,325,705, Cl. 8-676.000.

Harnisch, Horst: *See*—
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.

Harper, Lee R.: *See*—
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Harper, Rex M.: *See*—
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.

Harris, Peter: *See*—
Brown, Charles R. T.; and Harris, Peter, 4,325,868, Cl. 260-123.500.

Harrison, William H., to Donald L. Morton & Associates. Deep heating electrode. 4,325,361, Cl. 128-1.300.

Harrow, Alastair D.; and Martin, John W., to Thomas J. Lipton, Inc. Reformed rice product. 4,325,976, Cl. 426-104.000.

Hart, Karel: *See*—
Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, 4,326,136, Cl. 307-451.000.

Hartman, Donald W.: *See*—
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Hartman, G. William, Jr.: *See*—
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Hartshorn, Angus J.; and Jones, Eric, to Imperial Chemical Industries Limited. Catalyst component. 4,325,835, Cl. 252-429.00B.

Hartung, Hansjurgen, to Rollei-Werke Franke & Heidecke GmbH & Co. KG. Coupling film advance and shutter release for a still camera. 4,325,622, Cl. 354-170.000.

Haruta, Masahiro: *See*—
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.

Harvey, Winston: *See*—
Janovick, Michael; Hammond, Donald F.; and Harvey, Winston, 4,325,421, Cl. 144-326.00R.

Hashimoto, Mitsuru: *See*—
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.

Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Method for preparing ketopinic acid halides and the free acid thereof. 4,325,891, Cl. 260-544.00L.

Haug, Edward W.: *See*—
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,325,189, Cl. 33-179.50B.

Hauni-Werke Korber & Co. KG.: *See*—
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Havel, Petr: *See*—
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.

Hayashi, Kiyoshi: *See*—
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.

Hayashi, Kunihiko: *See*—
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.

Hayes, Frank W. Production of ethanol from sugar cane. 4,326,036, Cl. 435-161.000.

Hayes, Larry J.: *See*—
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Hayes, Thomas E., to Johnson Controls, Inc. Gas pilot assembly for universal application and method of making same. 4,325,690, Cl. 431-78.000.

Hayner, Paul, to Sanders Associates, Inc. Single stage hydraulic valve. 4,325,412, Cl. 137-625.650.

Haynes, Charles W., to Joy Manufacturing Company. Kelly and kelly drive bushing. 4,325,233, Cl. 64-23.500.

Hayter, Steven R.: *See*—
Roark, James T.; and Hayter, Steven R., 4,325,534, Cl. 251-1.00A.

Hazeltine Corporation: *See*—
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Heat and Control, Inc.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.

Heather, James B.; and White, David R., to Upjohn Company, The. Debromination. 4,325,881, Cl. 260-397.450.

Hechenberger, Dieter: *See*—
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.

Heckman, Russell W.: *See*—
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Hefele, Josef, to Kufner Testilwerke KG. Raster-shaped heat-sealable adhesive coating for textiles and method of producing the same using a powder printing procedure. 4,326,004, Cl. 428-198.000.

Hefter, Erik; and Baumgarth, Rolf, to Knorr-Bremse GmbH. Device for regulating discharge of sand from a vehicle sander. 4,325,573, Cl. 291-3.000.

Hehl, Karl. Hydraulic actuator for injection molding machine. 4,325,287, Cl. 91-422.000.

Heikinheimo, Lennart O., to Plan-Sell Oy. Apparatus for the feeding of individual pieces of timber from a mat of a plurality of timber pieces. 4,325,477, Cl. 198-461.000.

Heine, Heinrich: *See*—
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Heine, Martin W.: *See*—
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Heinrich, Ernst: *See*—
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Heinrichs, Frank W., Jr., to McGraw-Edison Company. Electrical device with insulating conductor support structure. 4,326,097, Cl. 174-155.000.
Heiser, Joachim: *See*—
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Helfer, Joel N., to American Home Products Corporation. Sealing apparatus for intrauterine pressure catheter and the like. 4,325,387, Cl. 128-748.000.
Helgesen, Herman, to SAB Industri AB. Method for attenuating oscillations of a rotating system. 4,326,158, Cl. 322-4.000.
Hemingsley, Herbert, to English Clays Lovering Pochin & Company Limited. Comminution of minerals. 4,325,514, Cl. 241-16.000.
Henderson, Robert G.: *See*—
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.
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Hendrickson, Richard T., to Bendix Corporation, The. Load-leveling air pump. 4,325,567, Cl. 280-711.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Konrad, Gonther; and Lieske, Edgar, 4,325,704, Cl. 8-407.000.
Henle, Karl, to Hauni-Werke Korber & Co. KG. Apparatus for filling containers. 4,325,418, Cl. 141-182.000.
Henrion, Romain: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.
Henry, John T. Method of oil recovery. 4,325,432, Cl. 166-245.000.
Herbert Kannegiesser GmbH & Co.: *See*—
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Herbert, Roger B.; and Wilkinson, Alan F., to Westinghouse Electric Corp. Asymmetrically controlled static slip-recovery motor drive system. 4,326,156, Cl. 318-809.000.
Herbert, Roger B., to Westinghouse Electric Corp. Double inverter slip-recovery AC motor drive with asymmetrical gating per half-bridge. 4,326,157, Cl. 318-809.000.
Herfeld, Friedrich W. Mixing apparatus and method for condensing, mixing and granulating thermoplastic materials. 4,325,515, Cl. 241-57.000.
Herman, Frederick L.: *See*—
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Hermann, Eberhard F. Apparatus for determining and/or controlling a fixed filling level in a container. 4,325,416, Cl. 141-95.000.
Herrmann, Hans-Joachim, to Dynamit Noble Aktiengesellschaft. Process for preparation of hydrazobenzenes by catalytic hydrogenation of nitrobenzenes. 4,326,078, Cl. 564-312.000.
Hettel, David A.: *See*—
Cole, John N.; and Hettel, David A., 4,325,899, Cl. 264-86.000.
Hibi, Kazuo: *See*—
Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, 4,326,248, Cl. 364-200.000.
Hicks, John E., to Outboard Marine Corporation. Vehicle with adjustable seat. 4,325,446, Cl. 180-89.170.
Hicter, Jean-Marie; and Guerit, Pierre, to Societe de Vente de l'Aluminium Pechiney. Device for treating a molten metal or alloy using liquid and solid flux. 4,325,539, Cl. 266-207.000.
Hideshima, Keiji: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Hildon, Anthony M., to Propylox. Preparation of peracid by liquid-liquid extraction. 4,325,888, Cl. 260-502.00R.
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Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.
Hillman, Chester K. Flap holster. 4,325,505, Cl. 224-238.000.
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Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, to Hitachi, Ltd. Multiple virtual storage control system. 4,326,248, Cl. 364-200.000.
Hinsken, Hans: Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. Benzofuranone or indolinone compounds useful as stabilizers for organic materials. 4,325,863, Cl. 624-111.000.
Hintsch, Otto, to Sulzer Brothers Limited. Apparatus for storing filamentary material. 4,325,520, Cl. 242-47.010.
Hirano, Masachika: *See*—
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Hirt, Manfred, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Support of a machine part which rotates on a bolt or the like. 4,325,589, Cl. 308-101.000.
Hirvonen, Reijo, to Oy, Hollming; and Hirvonen, Reijo. Tank truck vehicle for transporting fluid or pulverous material, particularly oil. 4,325,560, Cl. 280-5.00D.
Hitachi Engineering Co., Ltd.: *See*—
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Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.
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Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
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Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
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Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, 4,325,995, Cl. 427-428.000.
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Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, 4,325,341, Cl. 123-472.000.
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Schutte, Heinz, 4,325,825, Cl. 210-371.000.
Hoefer, Peter S.; and Whitesides, Michael G., to Hoefer Scientific Instruments. Vertical gel slab electrophoresis apparatus and method therefor. 4,325,796, Cl. 204-180.00G.
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Hofer, Gerald: *See*—
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Loeliger, Peter, 4,326,055, Cl. 542-429.000.
Holdaway, Ross J., to Elastrator Company Limited. Elastic ring expander. 4,325,172, Cl. 29-235.000.
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Rek, Johannes H. M.; and Holemans, Pieter M. J., 4,325,980, Cl. 426-604.000.
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Crowley, Raymond R.; Daniels, Edward P.; and Holtz, Earl B., 4,325,440, Cl. 177-25.000.
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Abe, Yoshiharu; Gotoh, Osamu; and Takagi, Akinobu, 4,325,348, Cl. 123-571.000.
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Acker, William F., 4,326,168, Cl. 328-162.000.
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Horn, Michael, to Optsonic Research Associates, Ltd. Optical bi-chromatic position finder. 4,325,256, Cl. 73-607.000.
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Hosoda, Seiichi, to Olympus Optical Co., Ltd. Light source apparatus. 4,325,618, Cl. 354-33.000.
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Hosterman, Harry L., to Graham, Charles. Telephone credit card system. 4,326,123, Cl. 235-380.000.
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Houser, Clifford F., to Molecular Energy Corp. Heating system. 4,325,355, Cl. 126-263.000.
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Howland, Leland L., to Thermo King Corp. Method and apparatus for transport refrigeration system control. 4,325,224, Cl. 62-196.00A.
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Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,842, Cl. 252-443.000.
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Everett, Gary L.; and Hu, William C., 4,325,804, Cl. 208-58.000.
Huang, Irene C.: *See—*
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,326,077, Cl. 564-211.000.
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Queneau, Paul B.; Beckstead, Leo W.; and Huggins, Dale K., 4,325,919, Cl. 423-61.000.
Huggins, Robert A.; and Raistrick, Ian D., to Stanford University. Electrochromic material and electro-optical display using same. 4,325,611, Cl. 350-357.000.
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Gardner, Leland V., 4,325,633, Cl. 356-141.000.
Marom, Emanuel, 4,325,603, Cl. 350-96.140.
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Seitz, Hans; and Huinink, Heinrich, 4,325,423, Cl. 152-361.00R.
Hukill, Charles A. Air injection system for internal combustion engines. 4,325,332, Cl. 123-169.0PA.
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Remer, Robert K., 4,325,977, Cl. 426-534.000.
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Humphrey, Theodore J. Speaker system which inverts and redirects the speaker backwave. 4,325,454, Cl. 181-145.000.
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Hunn, Reginald A., to South African Inventions Development Corporation. Waterproofing of insulated electric cables. 4,326,094, Cl. 174-23.00R.
Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., to Calgon Corporation. Combined visible light and thermally activated continuous polymerization process. 4,325,794, Cl. 204-159.230.
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Vancha, John, 4,326,273, Cl. 367-112.000.
Husa, Marlin V. Heating apparatus. 4,325,353, Cl. 126-121.000.
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Hwang, Jaw-Yeu, to United States of America, Energy. Method for limiting heat flux in double-wall tubes. 4,325,425, Cl. 165-1.000.
Hydro Air Industries, Inc.: *See—*
Moreland, Gerald W., 4,325,149, Cl. 4-488.000.
Hydrovak Systems (Holland) B.V.: *See—*
van Waveren, Peik J.; and de Vrij, Ary, 4,325,826, Cl. 210-776.000.
Iafret, John E., to General Motors Corporation. Mounting member. 4,325,525, Cl. 248-27.300.
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Kruse, Walter M.; and Meshreki, Makram H., 4,326,072, Cl. 562-587.000.
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Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,325,974, Cl. 424-343.000.
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Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.
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Imperial Chemical Industries Limited: *See—*
Baker, Brian, 4,325,658, Cl. 405-264.000.
Hartshorn, Angus J.; and Jones, Eric, 4,325,835, Cl. 252-429.00B.
Punja, Nazim, 4,325,966, Cl. 424-285.000.
Improved Consumers Products, Inc.: *See—*
Paynton, Richard H.; and Paynton, William C., 4,325,291, Cl. 98-67.000.
Inai, Yuichi: *See—*
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Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Indracos S.r.l.: *See—*
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Industrial Resources, Inc.: *See—*
Rosenberg, Harvey S.; and Genco, Joseph M., 4,325,713, Cl. 55-73.000.
Inertia Switch Limited: *See—*
Jackman, Peter R., 4,326,111, Cl. 200-61.45R.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,325,194, Cl. 36-29.000.

Inoue, Hiroshi, to Ricoh Watch Co., Ltd. Sealing agent for plastic liquid crystal display panels. 4,325,610, Cl. 350-343.000.

Inoue, Yukio: *See*—
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.

Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, to Meiji Seika Kaisha, Ltd. 1-Oxadethiacephalosporin derivatives and antibacterial use thereof. 4,325,951, Cl. 424-248.520.

Institut Cerac S.A.: *See*—
Morris, David G., 4,325,895, Cl. 264-23.000.

Institut Francais du Petrole: *See*—
Arnaudeau, Marcel, 4,325,712, Cl. 55-48.000.

International Business Machines Corporation: *See*—
Aboaf, Joseph A.; and Klokholm, Erik, 4,325,733, Cl. 75-170.000.
Abramson, Paul, 4,326,287, Cl. 370-29.000.
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
Bouricius, Willard G.; and Feistel, Horst, 4,326,098, Cl. 178-22.080.
Curry, Steven A., 4,325,644, Cl. 400-161.400.
Fang, Frank F.; and Sai-Halasz, George A., 4,326,208, Cl. 357-16.000.
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.

International Harvester Company: *See*—
Cicci, George B., 4,325,209, Cl. 56-1.000.

International Standard Electric Corporation: *See*—
Friedrich, Robert; and Schmidt, Peter, 4,325,613, Cl. 354-1.000.

International Telephone and Telegraph Corporation: *See*—
Vincent, A. L., 4,325,911, Cl. 422-75.000.

Interox: *See*—
Gabellieri, Rodolfo, 4,326,035, Cl. 435-247.000.

Io, Yukito: *See*—
Seki, Masahiko; and Io, Yukito, 4,325,540, Cl. 266-243.000.

Ioro, Giuseppe: *See*—
Romano, Ugo; and Ioro, Giuseppe, 4,326,079, Cl. 564-393.000.

Irick, Gether, Jr.; and Kelly, Charles A., to Eastman Kodak Company. Oxadiazole ultraviolet stabilizers and their use in organic compositions. 4,326,065, Cl. 548-143.000.

Ishida, Masahide: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,325,441, Cl. 177-25.000.

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Tanaka, Ryuzo; and Ishigaki, Hisao, 4,326,281, Cl. 368-294.000.

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Tsuji Kikuro; and Ishigaki, Masaya, 4,325,632, Cl. 355-86.000.

Ishiguro, Juichi: *See*—
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, 4,325,994, Cl. 427-376.800.

Ishikawa, Tadayoshi; and Lee, Do I., to Dow Chemical Company, The. Sequential emulsion polymerization process. 4,325,856, Cl. 523-201.000.

Ishimoto, Ryozo: *See*—
Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.

Ishitani, Shizuo: *See*—
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, 4,325,995, Cl. 427-428.000.

Ishizumi, Kikuo: *See*—
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.

Ismar GmbH: *See*—
Ismar, Theodor, 4,325,516, Cl. 241-73.000.

Ismar, Theodor, to Ismar GmbH. Apparatus for the grinding of surplus bread. 4,325,516, Cl. 241-73.000.

Isono, Akira: *See*—
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.

Iten, Clemens A.; and Chase, David O., to American Safety Razor Company. Facial brush for controlling *pseudofolliculitis barbae*. 4,325,392, Cl. 132-80.00R.

Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, to Konishiroku Photo Industry Co., Ltd. Photographic material containing a high boiling solvent. 4,326,022, Cl. 430-546.000.

ITT Industries, Inc.: *See*—
Weiler, Rolf; and Bohm, Peter, 4,325,218, Cl. 60-547.00R.
Weiler, Rolf; and Schopper, Bernd, 4,325,407, Cl. 137-493.200.

Ittel, Steven D.: *See*—
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., 4,326,084, Cl. 568-360.000.

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Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.

Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Shock control arrangement in hydraulic control system of automatic power transmission. 4,325,271, Cl. 74-869.000.

Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, to Olympus Optical Co. Limited. Reversed image sensing apparatus. 4,326,217, Cl. 358-76.000.

Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Electronic flash device. 4,325,621, Cl. 354-145.000.

Izumi, Chikahiko: *See*—
Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, 4,326,248, Cl. 364-200.000.

J. I. Case Company: *See*—
Marto, John H., 4,325,210, Cl. 56-11.600.

Jackman, Peter R., to Inertia Switch Limited. Inertia switch device. 4,326,111, Cl. 200-61.45R.

Jacobi, Edgar F.; and Madden, Mark R. Energy system. 4,326,013, Cl. 429-20.000.

Jacobs, Karlhans: *See*—
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.

Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. Polymeric amine metallate coatings. 4,325,740, Cl. 106-300.000.

Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process for producing alkylene carbonates. 4,325,874, Cl. 260-340.200.

Jacobsson, Kurt A. G.; Tholander, Lars H. G.; and Wide, Ulf-Erik, to Aktiebolaget IRO. Adjustable pulley. 4,325,702, Cl. 474-56.000.

Jahns, Hans O.; and Weiss, Richard T., to Exxon Production Research Company. Multiple slope structure. 4,325,655, Cl. 405-217.000.

James, Donald N.: *See*—
Svacina, Lawrence M.; and James, Donald N., 4,325,254, Cl. 73-356.000.

Jandeska, William F., Jr.; and Netherton, Charles F., to General Motors Corporation. Method of forming thin curved rare earth-transition metal magnets from lightly compacted powder preforms. 4,325,757, Cl. 148-103.000.

Janhonen, Veikko I. Package carton and procedure for its manufacture. 4,325,507, Cl. 229-55.000.

Janovick, Michael; Hammond, Donald F.; and Harvey, Winston. Method and apparatus for cutting and trimming shingles. 4,325,421, Cl. 144-326.00R.

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Kirisawa, Atsushi, 4,325,320, Cl. 118-52.000.

Jargiello, Paul, to Polychrome Corporation. Lithographic printing plate. 4,326,018, Cl. 430-15.000.

Jarreau, Francois-Xaver; and Koenig, Jean J., to Etablissements Nativelle S.A. Amino-14 steroid derivatives and process for preparation of the same. 4,325,879, Cl. 260-349.000.

Jarrett, Robert B.; and Pace, Wilson D., to Motorola, Inc. Differential to single-ended converter utilizing inverted transistors. 4,326,135, Cl. 307-355.000.

Jaschke, Peter: *See*—
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Jean Walterscheid GmbH: *See*—
Seigert, Peter, 4,325,587, Cl. 308-36.100.

Jelinek, Richard: *See*—
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.

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Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.

Jendrisak, Aloysius A.: *See*—
Darling, Stephen D.; Jendrisak, Aloysius A.; and Bokmiller, David J., 4,325,698, Cl. 434-278.000.

Jensen, Peter W., to Ampex Corporation. Synchronous color conversion system. 4,326,216, Cl. 358-8.000.

Jensen, Thomas H., to PPG Industries, Inc. High pressure modular forehearth. 4,325,721, Cl. 65-1.000.

Jensen, Thomas H., to PPG Industries, Inc. Bushing environment control assembly. 4,325,722, Cl. 65-12.000.

Jochumsen, Hans B.: *See*—
Larsen, Poul; and Jochumsen, Hans B., 4,325,192, Cl. 34-80.000.

Jockel, Heinz: *See*—
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.

Johansson, B. Gooran: *See*—
Sundelin, Bo; Wahlin, Bengt R. A.; and Johansson, B. Gooran, 4,325,695, Cl. 433-91.000.

John Wyeth and Brother Limited: *See*—
Shepherd, Robin G., 4,325,953, Cl. 424-250.000.

Johnson, Burnett H., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with aromatic sulfones or aromatic sulfoxides. 4,325,860, Cl. 324-155.000.

Johnson Controls, Inc.: *See*—
Bramow, Scott B.; and Holloway, Thomas M., 4,325,427, Cl. 165-27.000.
Hayes, Thomas E., 4,325,690, Cl. 431-78.000.

Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-PGI_2 compounds. 4,325,875, Cl. 260-346.220.

Johnson, Stuart J.: *See*—
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,325,189, Cl. 33-179.50B.

Jones, Eric: *See*—
Hartshorn, Angus J.; and Jones, Eric, 4,325,835, Cl. 252-429.00B.

Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., to Lever Brothers Company. Process for bleaching naturally-occurring oils and fats. 4,325,883, Cl. 260-423.000.

Jones, William W., to C. K. Kelley and Sons, Inc. Single line pressure-pressure pneumatic tube system. 4,325,660, Cl. 406-84.000.

Jordan, Michael, to Technicraft, Inc. Automated multiple-purpose chemical-analysis apparatus. 4,325,910, Cl. 422-64.000.

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Josefsson, Erik A. A., to SSAB Svenskt Stal Aktiebolag. Method for producing a steel strip composed of a dual-phase steel. 4,325,751, Cl. 148-12.00F.

Josephson, Elliot, to Astes Components, Ltd. Flyback power supply booster circuit. 4,326,244, Cl. 363-56.000.

Joy Manufacturing Company: *See*—
Haynes, Charles W., 4,325,233, Cl. 64-23.500.
Swindall, William S.; and Mahyera, Anil, 4,325,437, Cl. 173-131.000.

Jukes, John A., to Jukes, John A.; and Mavriks, George, a part interest. Threaded metal insert. 4,325,665, Cl. 411-176.000.

Julian Electric Inc.: *See*—
Julian, Victor J.; and Julian, Kenneth A., 4,325,760, Cl. 156-49.000.

Julian, Ernest L.; and Gaylard, Phyllis S., to Pinetree Service Corporation. Powered platform lift system for persons in wheelchairs. 4,325,668, Cl. 414-546.000.

Julian, Kenneth A.: *See*—
Julian, Victor J.; and Julian, Kenneth A., 4,325,760, Cl. 156-49.000.

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Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich, 4,325,649, Cl. 403-231.000.

Jung, Michel: *See*—
Bey, Philippe; and Jung, Michel, 4,326,071, Cl. 562-574.000.

Kabushiki Kaisha Dai-ichi Shiko: *See*—
Tsuji Kikuro; and Ishigaki, Masaya, 4,325,632, Cl. 355-86.000.

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Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Anami, Yuichi, 4,325,444, Cl. 180-70.00R.
Umeda, Haruhiko, 4,325,451, Cl. 180-294.000.

Kabushiki Kaisha Medos Kenkyusho: *See*—
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Hotta, Mitsuhiko; Furuichi, Shuhei; and Shigihara, Takanori, 4,326,274, Cl. 367-118.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,325,774, Cl. 156-542.000.

Kackenmeister, Carl F.: *See*—
Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., 4,326,242, Cl. 362-11.000.

Kackos, Edward M., to Vernitron Corporation. Process for quieting steam injected into water in a sterilizer. 4,325,906, Cl. 422-26.000.

Kaemmerer, Erich, to Bernard, Ingrid. Infusion device. 4,325,368, Cl. 128-214.00R.

Kaesz, He.bert D.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,325,802, Cl. 208-10.000.

Kagome Co., Ltd.: *See*—
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.

Kahermanes, Steven R.: *See*—
Owens, William K.; and Kahermanes, Steven R., 4,326,270, Cl. 365-218.000.

Kahler, Richard W. Stable fluidic smoking device. 4,325,390, Cl. 131-173.000.

Kaibel, Gerd: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.

Kaji, Nobuhiko; Honda, Hidenobu; and Shikano, Hiroshi. Refractory for casting and process for producing same. 4,326,040, Cl. 501-100.000.

Kalbfeld, Jack W.: *See*—
Seckendorf, Bernard A.; and Kalbfeld, Jack W., 4,325,619, Cl. 354-121.000.

Kalbskopf, Reinhard; and Baumberger, Otto, to Societa Italiana Vetro-Siv-S.p.A. Process for the production of an electrically conducting article. 4,325,987, Cl. 427-110.000.

Kali-Chemie Pharma GmbH.: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.

Kalmar Last Maskin Verkstad AB: *See*—
Larsson, Nils-Olof, 4,325,464, Cl. 187-9.00E.

Kaloi, Cyril M., to United States of America, Navy. Corner fed electric non rectangular microstrip dipole antennas. 4,326,203, Cl. 343-700.0MS.

Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., to California Institute of Technology. Coal desulfurization by aqueous chlorination. 4,325,707, Cl. 44-1.0SR.

Kamei, Atsutaro: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.

Kaminstein, Bernard. Non-slip place mat. 4,326,006, Cl. 428-204.000.

Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Optical system of a copying machine. 4,325,608, Cl. 350-165.000.

Kanai, Yukitomi: *See*—
Matsumoto, Tomomi; Amemiya, Kiyoshi; and Kanai, Yukitomi, 4,326,295, Cl. 455-188.000.

Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, to Hitachi, Ltd.; and Kawamura Co., Ltd. Hydraulic pressure producing system for a hydraulic press. 4,325,678, Cl. 417-313.000.

Kanebo, Ltd.: *See*—
Otoi, Kiyoshi; and Nasuno, Toshihiro, 4,325,741, Cl. 106-308.00N.

Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Apparatus for testing a control system for automotive vehicle. 4,325,251, Cl. 73-119.00A.

Kanehira, Katsuyuki: *See*—
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 350-96.200.

Kaneno, Masayuki: *See*—
Oda, Isao; and Kaneno, Masayuki, 4,326,038, Cl. 501-41.000.

Kang, Jung W., to Firestone Tire & Rubber Company, The. Method for the preparation of bis(*p*-aminobenzoato) cobalt. 4,325,884, Cl. 260-439.00R.

Kang, Kenneth S.; Colegrove, George T.; and Veeder, George T., to Merck & Co., Inc. Deacetylated polysaccharide S-60. 4,326,052, Cl. 536-1.000.

Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Polysaccharide S-60 and bacterial fermentation process for its preparation. 4,326,053, Cl. 536-1.000.

Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., to United States of America, Energy. Weld braze technique. 4,326,117, Cl. 219-85.0CM.

Kannegiesser, Martin, to Herbert Kannegiesser GmbH & Co. Apparatus for stiffening textile sheets by coating with plastic. 4,325,324, Cl. 118-642.000.

Kantesaria, Prabhudas P.; and Matthews, Francis T., to Combustion Engineering, Inc. Hybrid fluidized bed combuster. 4,325,327, Cl. 122-4.00D.

Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Apparatus for gapping a continuous slide fastener stringer. 4,325,185, Cl. 29-770.000.

Kao Soap Co., Ltd.: *See*—
Matsumoto, Tadao; and Koizawa, Masaaki, 4,325,933, Cl. 423-415.00P.
Okada, Eisaburo; and Sakagami, Koji, 4,325,736, Cl. 106-88.000.

Kapp, Wolfgang, to Deutsche Gesellschaft fur Schadlingsbekampfung mbH. Pesticide and process for its production. 4,325,938, Cl. 424-18.000.

Karr, Gerald W.; and Page, Robert E., to Beloit Corporation. Reel spool pneumatic core clamp. 4,325,518, Cl. 242-68.000.

Kashiwazaki, Seiichi: *See*—
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.

Kashulin, Sergei M.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.

Kaspar, Vaclav: *See*—
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.

Kassakian, John G.: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.

Kato, Takashi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine equipped with an auxiliary combustion chamber. 4,325,333, Cl. 123-260.000.

Katsube, Junki: *See*—
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.

Katz, Jay W. Means for treating symptoms of Meniere's disease or the like. 4,325,386, Cl. 128-733.000.

Katz, Larry L.: *See*—
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.

Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Automatic embroidery sewing machine. 4,325,313, Cl. 112-103.000.

Kawai, Toshihiko: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.

Kawakami, Tomiko: *See*—
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.

Kawamoto, Tamio, to Nissan Motor Co., Ltd. Apparatus for preventing oil leakage from a vehicle power transmission. 4,325,557, Cl. 277-65.000.

Kawamura Co., Ltd.: *See*—
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.

Kawamura, Satoshi: *See*—
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, 4,325,994, Cl. 427-376.800.
Kawanabe, Hitoshi: *See*—
Aso, Akira; and Kawanabe, Hitoshi, 4,326,210, Cl. 357-22.000.
Kawashima, Machio: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
Kearney-National Inc.: *See*—
Murdock, Robert E., 4,326,184, Cl. 337-168.000.
Keblys, Kestutis A., to Ethyl Corporation. Thermal process for preparing 3-phenoxybenzyl bromide. 4,326,089, Cl. 568-639.000.
Kelker, John W., Jr.: *See*—
Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., 4,326,117, Cl. 219-85.0CM.
Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Transferring rigid sheets from one conveyor to another. 4,325,723, Cl. 65-104.000.
Keller, Ernst. System for the increase of the number of differing locking possibilities in rotary cylinder locks. 4,325,241, Cl. 70-358.000.
Kelley, Lee M. Solar heat collector. 4,325,360, Cl. 126-438.000.
Kelly, Charles A.: *See*—
Irick, Gether, Jr.; and Kelly, Charles A., 4,326,065, Cl. 548-143.000.
Kelly, Quentin T., to Pressurized Products, Inc. Pressurized portable elastic membrane liquid container. 4,325,498, Cl. 222-210.000.
Kelsey, Robert D., to Bramah Stainless Products Limited. Method of making saw blades. 4,325,272, Cl. 76-112.000.
Kemp, Ian: *See*—
Corner, Michael R.; Kemp, Ian; Allbert, Barrie J.; and French, Tom, 4,325,422, Cl. 152-352.00R.
Kemp, Raymond: *See*—
Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, 4,325,161, Cl. 15-304.000.
Kennecott Corporation: *See*—
Chapman, Harry S., 4,325,998, Cl. 428-36.000.
KeNova AB: *See*—
Nilson, Nils B., 4,325,369, Cl. 128-218.00D.
Kenshol, Kenneth W., to Norton Company. Flame spray gun. 4,325,512, Cl. 239-84.000.
Kern, Calvin V.; and Zepp, Lawrence P., to Eltra Corporation. Position-retentive valve seat for hydraulic cylinder. 4,325,700, Cl. 440-61.000.
Ketner, Clyde R., to Boeing Company, The. Lightweight cargo container and fittings. 4,325,488, Cl. 220-1.500.
Kewanee Industries, Inc.: *See*—
Green, Harold A.; Merianos, John J.; and Petrocçi, Alfonso N., 4,325,940, Cl. 424-70.000.
Khambatta, Adi F., to Welwyn Electric Limited. Process for producing an electrical resistor having a metal foil bonded to a ceramic or glass-ceramic substrate. 4,325,183, Cl. 29-621.000.
Kidode, Masatsugu; Asada, Haruo; and Tabata, Mitsuo, to Agency of Industrial Science & Technology, The President of the. Image memory device. 4,326,202, Cl. 340-799.000.
Kim, Dae K.; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Hydrocarbon conversion catalyst system and method. 4,325,808, Cl. 208-65.000.
Kimenis, Agris A.: *See*—
Vigante, Brigita A.; Ozol, Yan-Voldemar Y.; Vitolin, Rasma O.; Silenietse, Gunta O.; Kimenis, Agris A.; and Dubur, Gunar Y., 4,326,064, Cl. 546-322.000.
Kimura, Toshihiko: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Kimura, Yoshikazu; and Tanabe, Kenjiro, to Dainippon Screen Seizo Kabushiki Kaisha. Automatic masking device including an aperture extension means. 4,325,630, Cl. 355-74.000.
Kine, Masayoshi, to Shimano Industrial Company Limited. Bicycle which facilitates wheel removal. 4,325,467, Cl. 188-24.120.
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., to United States of America, Army. Blast suppressive shielding. 4,325,309, Cl. 109-49.500.
Kino, Gordon S.; Corl, Paul D.; and Grant, Peter M. Real-time digital, synthetic-focus, acoustic imaging system. 4,325,257, Cl. 73-626.000.
Kinoshita, Kunio: *See*—
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 350-96.200.
Kinugasa, Munetaka: *See*—
Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, 4,325,772, Cl. 156-294.000.
Kiril, Kazuo, to Yoshida Kogyo K.K. Method and apparatus for finishing a pair of elongate slide fastener stringers. 4,325,173, Cl. 29-408.000.
Kirisawa, Atsushi, to Japan Envirotic Industry Co., Ltd. Apparatus employed in surface treatment. 4,325,320, Cl. 118-52.000.
Kirkpatrick, Maurice, to Tannoy Products Limited; and Lenver Products Limited. Loudspeaker grille. 4,325,455, Cl. 181-148.000.
Kirschke, John A. Apparatus and process for repairing underground gasoline tanks. 4,325,652, Cl. 405-57.000.
Kisch, Horst, to Studiengesellschaft Kohle m.b.H. Catalysis of photochemical production of hydrogen from water. 4,325,793, Cl. 204-157.10R.
Kistler Instrumente AG: *See*—
Guth, Werner; Wolfer, Peter; Dahler, Hanspeter; and Calderara, Reto, 4,326,143, Cl. 310-329.000.
Kitabayashi, Seiichi. Throwaway type gas lighter. 4,325,692, Cl. 431-254.000.
Kitagawa, Hidemasa: *See*—
Kogure, Takuyo; and Kitagawa, Hidemasa, 4,326,224, Cl. 360-65.000.
Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Flat cable clamp. 4,325,526, Cl. 248-73.000.
Kitagawa Industries Co., Ltd.: *See*—
Kitagawa, Hiroji, 4,325,526, Cl. 248-73.000.
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, to Ebara Corporation. Coating metal for preventing the crevice corrosion of austenitic stainless steel and method of preventing crevice corrosion using such metal. 4,325,994, Cl. 427-376.800.
Kitrell, John V. Folding disabled vehicle warning symbol. 4,325,318, Cl. 116-28.00R.
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply system for internal combustion engine. 4,325,893, Cl. 261-50.00A.
Kjellin, Per G.; and Persson, Carl G., to Aktiebolaget Draco. Method and pharmaceutical preparation for treating chronic obstructive airway disease and cardiac disease, and intermediates for the preparation of therapeutically active xanthine derivatives. 4,325,956, Cl. 424-253.000.
Klaue, Hermann. Disk brakes. 4,325,466, Cl. 188-71.400.
Klauke, Erich: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Klaus, Werner, to U.S. Philips Corporation. C-Core transformer. 4,326,182, Cl. 336-198.000.
Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, to Degussa Aktiengesellschaft. Process for the production of 4-amino-6-tert. butyl-3-mercapto-1,2,4-triazin-5-one. 4,326,056, Cl. 544-182.000.
Kleeneze Limited: *See*—
Berry, Richard M., 4,325,484, Cl. 211-66.000.
Klein, Ottokar, to Robert Bosch GmbH. Incremental rotary transmitter. 4,326,128, Cl. 250-231.0SE.
Kleinschmidt, Heinz: *See*—
Bernhardt, Wolfgang; Kleinschmidt, Heinz; and Heiser, Joachim, 4,325,410, Cl. 137-596.130.
Klenk, Herbert: *See*—
Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, 4,326,056, Cl. 544-182.000.
Klett, John L.: *See*—
Fortier, Joseph R.; and Klett, John L., 4,325,300, Cl. 100-295.000.
Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H. Hemostatic clip applicator. 4,325,376. Cl. 128-325.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Kohler, Wolfgang; and Hafner, Karl E., 4,325,342, Cl. 123-504.000.
Klokholm, Erik: *See*—
Aboaf, Joseph A.; and Klokholm, Erik, 4,325,733, Cl. 75-170.000.
Klotz, Robert J.; and Stephen, Donald W., to Combustion Engineering, Inc. Method and apparatus for measuring the reactivity of a spent fuel assembly. 4,325,785, Cl. 376-154.000.
Klyne, Lawrence: *See*—
Hopkins, Norman K.; and Klyne, Lawrence, 4,326,235, Cl. 361-156.000.
Knight Engineering & Molding Co.: *See*—
Ewald, Ronald F., 4,325,497, Cl. 222-153.000.
Knoepfle, Thomas L.: *See*—
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.
Knogo Corporation: *See*—
Novikoff, Eugene B., 4,326,198, Cl. 340-572.000.
Knoll International, Inc.: *See*—
Morrison, Andrew I., 4,325,597, Cl. 312-258.000.
Knorr-Bremse GmbH: *See*—
Hefter, Erik; and Baumgarth, Rolf, 4,325,573, Cl. 291-3.000.
Knudsen, Ernest W., Jr.: *See*—
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.
Kobayashi, Hideo: *See*—
Seki, Yashiro; and Kobayashi, Hideo, 4,326,195, Cl. 340-365.00R.
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, to Fuji Photo Film Co., Ltd. Silver halide emulsion containing yellow-dye-forming coupler. 4,326,024, Cl. 430-557.000.
Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube device for display system. 4,326,150, Cl. 315-325.000.
Kobayashi, Kazutoshi: *See*—
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, 4,325,338, Cl. 123-407.000.
Kobayashi, Nobuo: *See*—
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Kobayashi, Nobuyuki: *See*—
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
Kobayashi, Tsuneaki: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Kober, Alfred E.; and Mahoney, Dennis F., to Apollo Technologies, Inc. Method of conditioning flue gas and separating the particles therefrom. 4,325,711, Cl. 55-5.000.

Koenig, Alan R.: *See*—
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,325,849, Cl. 252-62.000.
Koenig & Bauer AG: *See*—
Grosshauser, Heinrich K., 4,325,301, Cl. 101-217.000.
Koenig, Jean J.: *See*—
Jarreau, Francois-Xaver; and Koenig, Jean J., 4,325,879, Cl. 260-349.000.
Kogure, Takuyo; and Kitagawa, Hidemasa, to Matsushita Electric Industrial Co. Ltd. Automatic signal compensation recording and reproducing apparatus. 4,326,224, Cl. 360-65.000.
Kohler, Janet K., to United States of America, Navy. Battery activate assembly. 4,326,015, Cl. 429-52.000.
Kohler, Wolfgang; and Hafner, Karl E., to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection pump control for internal combustion engines, especially diesel engines. 4,325,342, Cl. 123-504.000.
Kohno, Hideki; Shiono, Hidemi; and Yamamoto, Shinji, to Hitachi Medical Corporation. Method of reconstructing cross-section image. 4,326,252, Cl. 364-414.000.
Koike, Kengo: *See*—
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
Koizawa, Masaaki: *See*—
Matsumoto, Tadao; and Koizawa, Masaaki, 4,325,933, Cl. 423-415.00P.
Kojima, Masao, to Shimano Industrial Company Limited. Bicycle control lever device having control lever movement conforming to a cyclist's fingers. 4,325,267, Cl. 74-489.000.
Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, to Sumitomo Chemical Company, Ltd. Manufacture of polymerized 2,2,4-trimethyl-1,2-dihydroquinoline. 4,326,062, Cl. 546-166.000.
Kojima, Yasufumi: *See*—
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Kokubo, Eiichi: *See*—
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 83-205.000.
Kollonitsch, Janos; and Patchett, Arthur A., to Merck & Co., Inc. Fluorinated amino acids. 4,325,961, Cl. 424-273.00R.
Kolosov, Ivan A. Device for measuring thickness of storage cell plates in sorting. 4,325,248, Cl. 73-37.500.
Komaki, Shozo: *See*—
Okamoto, Yoshiharu; Horikawa, Izumi; and Komaki, Shozo, 4,326,294, Cl. 455-139.000.
Komatsu Ltd.: *See*—
Stang, John H.; and Yamaguchi, Hiromasa, 4,325,219, Cl. 60-599.000.
Komiya, Osamu, to Olympus Optical Co., Ltd. High frequency electrosurgical instrument for an endoscope. 4,325,374, Cl. 128-303.150.
Kondr, Milan: *See*—
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Konig, Dieter: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Konishiroku Photo Industry Co., Ltd.: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Konrad, Gonther; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien. Hair dyes. 4,325,704, Cl. 8-407.000.
Koppers Company, Inc.: *See*—
Howell, Hilda, 4,325,841, Cl. 252-431.00C.
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, to Autoipari Kutato Intezet; and Taurus Gumiipari Vallalat. Spring leg which has a load proportionally limited damping, consisting of an air suspension and a telescopic shock absorber for motor vehicle. 4,325,541, Cl. 267-8.00R.
Korpman, Ralf, to Permacel. Process for pressure-sensitive adhesive coated products. 4,325,770, Cl. 156-230.000.
Korte, Siegfried: *See*—
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, 4,326,051, Cl. 528-386.000.
Kortye, Heinrich. Anchor plate. 4,325,481, Cl. 206-503.000.
Kosov, Anatoly F.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
Kostandian, Kliment A.: *See*—
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Kostjuchenko, Vasily V.: *See*—
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Kostner, Armin: *See*—
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, 4,325,413, Cl. 138-109.000.
Kowal, Witold: *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, to Vysoka skola chemicko-technologicka. Storage and homogenizing tank for kaolin suspensions. 4,325,642, Cl. 366-137.000.
Krattner, Richard: *See*—
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.
Kraus, Charles E., to Excelermatic Inc. Axial thrust bearing assembly. 4,325,592, Cl. 308-219.000.
Krauth, Axel: *See*—
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Kreider, David R.: *See*—
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Kreinberg, Earl R., to Protection Services, Inc. Battery regulation circuit. 4,326,161, Cl. 323-299.000.
Krepler, Albert, to Ruthner Industrieanlagen-Aktiengesellschaft. Method and an installation for obtaining or recovering hydrofluoric acid. 4,325,935, Cl. 423-483.000.
Kretzschmer, Horst: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Kriebel, Manfred: *See*—
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Krieger, Heinrich. Cascade cooling arrangement. 4,325,231, Cl. 62-335.000.
Kriegesmann, Jochen; Lipp, Alfred; and Reinmuth, Klaus, to Elektroschmelzwerk Kempten GmbH. Dense shaped articles of polycrystalline β-silicon carbide and process for the manufacture thereof by hot-pressing. 4,326,039, Cl. 501-90.000.
Krietemeier, Rickie F.; and Davis, Gary D. Artificial bird and method of making same. 4,325,996, Cl. 428-16.000.
Krtek, Jan: *See*—
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Krug, Adolf, to Siemens Aktiengesellschaft. Track monitoring device. 4,325,524, Cl. 246-34.00R.
Kruger, Bruno: *See*—
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Kruse, Walter M.; and Meshreki, Makram H., to ICI Americas Inc. Ruthenium catalyzed hydrogenation of D-glucuronic acid. 4,326,072, Cl. 562-587.000.
Krusic, Paul J.: *See*—
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Kubota Ltd.: *See*—
Bando, Niro; Watanabe, Haruo; and Miyata, Junji, 4,325,452, Cl. 180-306.000.
Kuboto, Hitoshi; and Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic pressure control valve assembly for automotive hydraulic brake system. 4,325,582, Cl. 303-24.00F.
Kuehler, Christopher W., to Chevron Research Company. Three-stage coal liquefaction process. 4,325,801, Cl. 208-10.000.
Kuehler, Christopher W.: *See*—
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,325,800, Cl. 208-8.0LE.
Kueter, Bernhard: *See*—
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Kugler, Artur; and Zaunberger, Franz X., to Zahnraderfabrik Renk Aktiengesellschaft, Firma. Apparatus for controlling the cooling system of a motor-vehicle drive. 4,325,330, Cl. 123-41.120.
Kuhlbrodt, Claus-Otto: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Kuhn, Manfred: *See*—
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Kuhn, Paul K.: *See*—
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., 4,325,261, Cl. 73-861.120.
Kula, Maria-Regina: *See*—
Wandrey, Christian; Wichmann, Rolf; Leuchtenberger, Wolfgang; Kula, Maria-Regina; and Buckmann, Andreas, 4,326,031, Cl. 435-146.000.
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., to Marvin Glass & Associates. Electronically controlled game apparatus with playing array positions actuatable by a player controlled movable object. 4,325,551, Cl. 273-110.000.

Kumagai, Ryohei; and Maruta, Kazuo, to Advance Company Limited. Coffee roaster. 4,325,191, Cl. 34-54.000.

Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, to Toyo Rubber Chemical Industrial Corporation. Mold equipment. 4,325,688, Cl. 425-436.00R.

Kun, Kenneth A.: *See—*
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Kunishima, Mamoru: *See—*
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.

Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, to Nippon Soken, Inc. Electronic speed control system for automotive vehicles. 4,325,336, Cl. 123-350.000.

Kunz, Bernard L., to Emerson Electric Co. Thermostatic expansion valve with remote adjustment. 4,325,508, Cl. 236-92.00B.

Kunze, Walter A., to Cities Service Company. Covered container. 4,325,492, Cl. 220-335.000.

Kuraray Company, Limited: *See—*
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Kurata, Masayuki: *See—*
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.

Kurosawa, Takuzo: *See—*
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.

Kusters, Eduard: *See—*
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Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., to Shell Internationale Research. Well for the solution mining of salt from an underground salt formation and a method for operating said well. 4,325,579, Cl. 299-5.000.

Kwong, Peter C.: *See—*
Boggs, Daniel R.; Kwong, Peter C.; and Laurin, Dean G., 4,325,417, Cl. 141-98.000.

Laboratoire L. Lafon: *See—*
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Laboratoires Jacques Logeais: *See—*
Maillard, Jacques G.; Vovan, Tri; and Legeai, Jacky M., 4,325,954, Cl. 424-251.000.

Lacks, Harold G. System and method for measuring and recording blood pressure. 4,325,383, Cl. 128-677.000.

Lafon, Louis, to Laboratoire L. Lafon. Phenylamidine derivatives. 4,325,964, Cl. 424-282.000.

Lagger, Helmut: *See—*
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Lakshmanan, Pallavoor R.: *See—*
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,325,853, Cl. 524-272.000.

Lamboo, Theodorus F.: *See—*
Van den Brink, Hans G.; and Lamboo, Theodorus F., 4,326,178, Cl. 372-61.000.

Lan, Shih-jung: *See—*
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,943, Cl. 424-177.000.
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,944, Cl. 424-177.000.
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,945, Cl. 424-177.000.

Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Steering valve mechanism having closed neutral position. 4,325,286, Cl. 91-373.000.

Lang, Richard D.; and Bolton, Theodore S., to Carrier Corporation. Apparatus for securing a cover to an air conditioning unit. 4,325,594, Cl. 312-100.000.

Lange, Karl H., to Baida-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G. Binocular telescope. 4,325,602, Cl. 350-36.000.

Langner, Norbert: *See—*
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.

Lantzsch, Reinhard: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.

Larsen, Peder M.; and Larsen, Uffe M. Valve claw to be situated at the end of a pipe to mount a closing valve. 4,325,404, Cl. 137-316.000.

Larsen, Poul; and Jochumsen, Hans B., to Lejbolle Maskinfabrik APS. Apparatus for dissicant drying and conveying of a granulate and a valve means preferably for use with said apparatus. 4,325,192, Cl. 34-80.000.

Larsen, Uffe M.: *See—*
Larsen, Peder M.; and Larsen, Uffe M., 4,325,404, Cl. 137-316.000.

Larson, Wayne F., to Supra Products, Inc. Key safe having improved bar locking system. 4,325,239, Cl. 70-139.000.

Larsson, Nils-Olof, to Kalmar Last Maskin Verkstad AB. Lifting stand of a motor-driven truck. 4,325,464, Cl. 187-9.00E.

Larter, Wayne D. Self-cleaning litter box. 4,325,325, Cl. 119-1.000.

Lasar, Theodore. Electrical power line transient noise filtering device. 4,326,179, Cl. 333-177.000.

Lathrop, Robert L.: *See—*
Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.

Laudien, Eckehard: *See—*
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Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 83-205.000.

Laurin, Dean G.: *See—*
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Law, Andrew B.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.

Layer, Robert W.: *See—*
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Layne, Kathy L.: *See—*
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.

Lazrus, Julian: *See—*
Bauer, Peter; and Lazrus, Julian, 4,325,235, Cl. 68-3.0SS.

Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Data processing system employing portable cards and operating stations making use of magnetic bubble elements. 4,326,267, Cl. 365-1.000.

Leary, Steven G.: *See—*
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.

LeBlanc, John R.: *See—*
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Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, to U.S. Philips Corporation. Threshold circuit using complementary field effect transistors. 4,326,136, Cl. 307-451.000.

Lechner, Hubert: *See—*
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Lectromelt Corporation: *See—*
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Lee, Do I.: *See—*
Ishikawa, Tadayoshi; and Lee, Do I., 4,325,856, Cl. 523-201.000.

Lee, Gary D.: *See—*
Chafetz, Harry; and Lee, Gary D., 4,325,876, Cl. 260-346.740.

Lee, Hyosong M., to Alfa-Laval AB. Arrangement for cleaning cutting fluid. 4,325,663, Cl. 409-136.000.

Lee, Kwok-fu: *See—*
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.

Lee, Shaw-Guang: *See—*
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Legeai, Jacky M.: *See—*
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Lehamnn, Bernd: *See—*
Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, 4,326,056, Cl. 544-182.000.

Leitmann, William J., to Hobson Bros., Inc. Electrical connector. 4,326,096, Cl. 174-84.00R.

Leitner, Lutz: *See—*
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.

Lejbolle Maskinfabrik APS: *See—*
Larsen, Poul; and Jochumsen, Hans B., 4,325,192, Cl. 34-80.000.

Lemon, Ronald. Auxiliary brake for tractor-trailer rig. 4,325,465, Cl. 188-4.00R.

Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, to Hoechst Aktiengesellschaft. Supporting sheath for a longitudinally shirred packaging tube. 4,325,413, Cl. 138-109.000.

Lenver Products Limited: *See—*
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Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See—*
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,325,960, Cl. 424-270.000.

Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., to Cabot Corporation. Apparatus for densifying powders of sub-micron particle size. 4,325,686, Cl. 425-371.000.

Leonardo, Ignazio, to Diamond Communication Products, Inc. Ground clamp for grounding coaxial cable. 4,325,598, Cl. 339-14.00L.

Lepselter, Martin P., to Bell Telephone Laboratories, Incorporated. High capacity etching process. 4,325,778, Cl. 156-643.000.

Lermann, Peter: *See—*
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Leuchtenberger, Wolfgang: *See—*
Wandrey, Christian; Wichmann, Rolf; Leuchtenberger, Wolfgang; Kula, Maria-Regina; and Buckmann, Andreas, 4,326,031, Cl. 435-146.000.

Lever Brothers Company: *See—*
Brown, Charles R. T.; and Harris, Peter, 4,325,868, Cl. 260-123.500.
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.
Postlethwaite, Dennis, 4,325,828, Cl. 252-102.000.
Rek, Johannes H. M.; and Holemans, Pieter M. J., 4,325,980, Cl. 426-604.000.

Levy, Allan, to Siemens Corporation. High power and/or high voltage switching operational amplifier. 4,326,170, Cl. 330-10.000.

Lewis, Derek C. Method of producing ammonia. 4,325,931, Cl. 423-363.000.
Lewis, Robert R.; and Graham, Donald C., to Westinghouse Electric Corp. Regenerative braking control for a transit vehicle. 4,326,154, Cl. 318-376.000.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm and Haas Company. Seed treatment with 3-isothiazolones. 4,325,201, Cl. 47-57.600.
LGZ Landis & Gyr Zug AG: *See*—
Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, 4,325,262, Cl. 73-861.280.
Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Thermoplastic resins containing coumarone-indene resin or polyindene. 4,326,045, Cl. 525-206.000.
Liard, Maurice. Knock-down plant pot. 4,325,202, Cl. 47-73.000.
Libit, Sidney M. Sealing and locking thread system. 4,325,487, Cl. 215-330.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Dahlberg, Reinhard, 4,326,188, Cl. 338-32.00S.
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Licitis, Gunars, Jr.: *See*—
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.
Liepmann, Hans: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Lieske, Edgar: *See*—
Konrad, Gonther; and Lieske, Edgar, 4,325,704, Cl. 8-407.000.
Lim, John; and Brady, Michael, to Filtrol Corporation. Zeolite catalysts and method of producing the same. 4,325,845, Cl. 252-455.00Z.
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., to Filtrol Corporation. Use of additional alumina for extra zeolite stability in FCC catalyst. 4,325,847, Cl. 252-455.00Z.
Lin, Chi-Hung: *See*—
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Lincoln, Frank H.: *See*—
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Lindell, James W.; and Barnett, Arthur F. Reinforcing arrangement for improving the strength and durability of a firearm holster. 4,325,506, Cl. 224-243.000.
Lindon, John A.; and Malin, Arthur. Mineralized drinking water and method of making same. 4,325,975, Cl. 426-66.000.
Lingner and Fischer GmbH: *See*—
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.
Lipke, Donald L.: *See*—
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Lipp, Alfred: *See*—
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Lisi, John: *See*—
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Littelfuse, Inc.: *See*—
Clay, Murray G., 4,326,186, Cl. 337-407.000.
Livemore, Gerald S. V. Mixing chamber in combination with a dust cyclone separator. 4,325,716, Cl. 55-265.000.
Livernois, John, to Canada Cycle and Motor Company Limited. Uniforms for ice hockey players. 4,325,148, Cl. 2-2.000.
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Trop, Moshe; and Livne, Avinoam, 4,325,979, Cl. 426-570.000.
Ljungstrom, Olle. Wind turbine of cross-flow type. 4,325,674, Cl. 416-19.000.
Lockheed Missiles & Space Company, Inc.: *See*—
Spilker, James J., Jr.; and Ramsay, William R., 4,326,292, Cl. 455-27.000.
Loeliger, Peter, to Hoffmann-La Roche Inc. Stilbene derivatives. 4,326,055, Cl. 542-429.000.
Lofquist, Robert A., to Allied Chemical Corporation. Method to reduce pressure drop in polyamide process piping. 4,325,397, Cl. 137-13.000.
Lohse, Friedrich: *See*—
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Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, to Ortho Diagnostics, Inc. Method for detecting and controlling flow rates of the droplet forming stream of an electrostatic particle sorting apparatus. 4,325,483, Cl. 209-3.100.
Lorang, Lucien: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.
Lord Corporation: *See*—
Sherrick, James W., 4,325,510, Cl. 238-341.000.
Lou, Perry W.: *See*—
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., to Badische Corporation. Liquid applicator for textile yarns. 4,325,322, Cl. 118-410.000.
Louderback, Allan L., to Beckman Instruments, Inc. Enzyme reference composition. 4,325,832, Cl. 252-408.000.
Lowe, Alan S.: *See*—
Wilkinson, Robert S.; and Lowe, Alan S., 4,325,345, Cl. 123-557.000.
Lowe, Edward J., to Albright & Wilson Limited. Rock treatment process. 4,325,928, Cl. 423-320.000.
Lower, Louie H. Sound box for musical instrument. 4,325,279, Cl. 84-275.000.
Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Positive toners containing long chain hydrazinium compounds. 4,326,019, Cl. 430-108.000.
Lucas Industries Limited: *See*—
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Mowbray, Dorian F., 4,326,139, Cl. 310-42.000.
Pickering, John F., 4,325,581, Cl. 303-22.00R.
Lucas, Klaus: *See*—
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Ludington, David N., to General Electric Company. One bit memory for bipolar signals. 4,326,269, Cl. 365-189.000.
Luk Lamellen und Kupplungsbau GmbH: *See*—
Steeg, Klaus; and Friedmann, Oswald, 4,325,472, Cl. 192-48.100.
Lukasik, Adam: *See*—
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Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., to UNC Recovery Corporation. Deprotonation of an alkylphenyl acid phosphate extractant. 4,325,918, Cl. 423-10.000.
Lupke, Gerd P. H.: *See*—
Lupke, Manfred A. A.; and Lupke, Gerd P. H., 4,325,685, Cl. 425-183.000.
Lupke, Manfred A. A.; and Lupke, Gerd P. H. Apparatus for producing thermoplastic tubing having interchangeable mold blocks. 4,325,685, Cl. 425-183.000.
Luwa AG: *See*—
Proske, Gerhard; Van der Piepen, Rolf; and Bittner, Hans-Joachim, 4,325,781, Cl. 159-13.00A.
Lynch, Larry W., to Fiat-Allis Construction Machinery, Inc. Accelerator/decelerator pedal and system. 4,325,266, Cl. 74-482.000.
Lynn, Gary S. Nesting patient transport tables. 4,325,561, Cl. 280-33.99R.
Lythgoe, Alan L.: *See*—
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M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
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Maag, Kurt: *See*—
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Maas, Rudolf J.; and Visser, Rene M., to Shell Oil Company. Process for the selective adsorption of para-xylene. 4,326,091, Cl. 585-828.000.
MacDermid Incorporated: *See*—
Ferrier, Donald R., 4,325,990, Cl. 427-305.000.
Machacek, Vaclav: *See*—
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.
Machida, Yukihiko: *See*—
Yamagiwa, Kazuo; and Machida, Yukihiko, 4,326,223, Cl. 360-33.000.
Mack, Michael H. Self-energizing water treatment accessory. 4,325,798, Cl. 204-248.000.
Madden, Mark R.: *See*—
Jacobi, Edgar F.; and Madden, Mark R., 4,326,013, Cl. 429-20.000.
Madi, Jeno: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Mador, Irving L.: *See*—
Ratchiffe, Charles T.; Soled, Stuart L.; Signorelli, Anthony J.; and Mador, Irving L., 4,326,081, Cl. 564-416.000.
Maeda, Kunihiro: *See*—
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
Magdics, Alex: *See*—
Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., 4,325,918, Cl. 423-10.000.
Magnavox Consumer Electronics Co.: *See*—
Rafter, Patrick M.; and Hitchcock, James E., 4,326,296, Cl. 455-192.000.
Magno, Robert; Roller, Donald C.; and Rood, Allan J., to International Business Machines Corporation. Collator with adjustable sheet aligner. 4,325,544, Cl. 271-221.000.
Magnuson Computer Systems, Inc.: *See*—
McCullough, Robert B., 4,326,250, Cl. 364-200.000.
Maguire, Eileen: *See*—
Donovan, Lawrence P., III; Maguire, Eileen; and Dillard, David A., 4,325,991, Cl. 427-307.000.
Donovan, Lawrence P., III; Maguire, Eileen; and Dillard, David A., 4,325,992, Cl. 427-307.000.
Mahoney, Dennis F.: *See*—
Kober, Alfred E.; and Mahoney, Dennis F., 4,325,711, Cl. 55-5.000.
Mahyera, Anil: *See*—
Swindall, William S.; and Mahyera, Anil, 4,325,437, Cl. 173-131.000.

Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, to Rosenthal Technik A.G.; and Aktiengesellschaft Kuehnle, Kopp & Kausch. Element and method for connecting ceramic and metallic parts. 4,325,647, Cl. 403-29.000.

Maillard, Jacques G.; Vovan, Tri; and Legeai, Jacky M., to Laboratoires Jacques Logeais. Pyrrolopyrimidinones and pyrroloimidazolones and their compositions and therapeutic methods. 4,325,954, Cl. 424-251.000.

Maille, Michel, to Thomson-Brandt. Low frequency cabinet, in particular for a triphonic audio network. 4,326,099, Cl. 179-1.0GA.

Maletsky, Albert: *See*—
Colon, Herman; and Maletsky, Albert, 4,325,851, Cl. 524-83.000.

Malin, Arthur: *See*—
Lindon, John A.; and Malin, Arthur, 4,325,975, Cl. 426-66.000.

Malkin, Howard, to Apex Foot Products Corporation. Orthotic device for the heel of a person's foot. 4,325,380, Cl. 128-581.000.

Mallet, Bernard, to Nadella. Composite bearing having deformable washer. 4,325,593, Cl. 308-163.000.

Mallos, Gene G.; and Bartholomew, Lowell T. Central/remote television monitoring system. 4,326,221, Cl. 358-210.000.

Malpas, Jon H., to Diemoulders Proprietary Limited. Filling-dispensing closure for a bag-like container. 4,325,496, Cl. 222-83.000.

Malpass, Dennis B., to Texas Alkyls, Inc. Organomagnesium complexes. 4,325,840, Cl. 252-431.00R.

Mandai, Masaaki: *See*—
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.

Mansell, Michael: *See*—
Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., 4,325,579, Cl. 299-5.000.

Manville Service Corporation: *See*—
Olmsted, Bruce C., Jr., 4,325,844, Cl. 252-448.000.

Marczynski, Jozef: *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.

Marisco, Joseph W., Jr.: *See*—
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marisco, Joseph W., Jr., 4,325,955, Cl. 424-251.000.

Markarian, Paul M.; and Howe, David C., to Sprague Electric Company. Dual AC motor-run capacitors. 4,326,237, Cl. 361-329.000.

Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., to Allen-Bradley Company. Terminal with interchangeable application module. 4,326,193, Cl. 340-365.00R.

Marling, Douglas S. Game using air blowers to move object. 4,325,555, Cl. 273-355.000.

Marom, Emanuel, to Hughes Aircraft Company. Electro-optic analog-to-digital converter. 4,325,603, Cl. 350-96.140.

Marsh, Phillip W.; and Wiedenman, Gregory B., to Sperry Rand Corporation. Error detection system. 4,326,291, Cl. 371-68.000.

Marshall, Larry G.: *See*—
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.

Martelee, Ghislain A., to Cockerill. Hydraulic force producing device. 4,325,274, Cl. 81-57.130.

Martens, Gerhard: *See*—
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, 4,325,517, Cl. 242-18.100.

Martin, Jack T. Bracket mounting. 4,325,528, Cl. 248-217.200.

Martin, John W.: *See*—
Harrow, Alastair D.; and Martin, John W., 4,325,976, Cl. 426-104.000.

Martin, Mack M. Muffler diffuser. 4,325,459, Cl. 181-248.000.

Martin, Patrick H.; and Michaels, Stephen L., to Dow Chemical Company, The. Use of aqueous triethylamine/phosphoric acid salt solutions to extract water and triethylamine from solutions thereof in organic solvents. 4,326,082, Cl. 564-497.000.

Martine, Walter I. Door construction. 4,325,204, Cl. 49-372.000.

Marto, John H., to J. I. Case Company. Idler sheave assembly. 4,325,210, Cl. 56-11.600.

Maruta, Kazuo: *See*—
Kumagai, Ryohei; and Maruta, Kazuo, 4,325,191, Cl. 34-54.000.

Maruyama, Isamu: *See*—
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.

Marvin Glass & Associates: *See*—
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.

Masai, Hiroto, to Aisin Seiki Kabushiki Kaisha. Connection means for cooling fan assemblies. 4,325,650, Cl. 403-372.000.

Masek, Bohuslav: *See*—
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.

Massachusetts Institute of Technology: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.

Mastell, Dale P.: *See*—
Culp, David W.; and Mastell, Dale P., 4,326,102, Cl. 179-2.00C.

Masui, Kiyoshi: *See*—
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.

Matano, Kenji: *See*—
Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, 4,325,629, Cl. 355-27.000.

Mataya, Karl F.: *See*—
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., 4,325,530, Cl. 248-317.000.

Matsufuji, Yohji: *See*—
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.

Matsui, Seiichi: *See*—
Yamada, Kozo; Ohba, Yasuhiro; and Matsui, Seiichi, 4,325,562, Cl. 280-62.000.

Matsui, Takeshi: *See*—
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,325,336, Cl. 123-350.000.

Matsumoto, Tadao; and Koizawa, Masaaki, to Kao Soap Co., Ltd. Process for stabilization of sodium percarbonate. 4,325,933, Cl. 423-415.00P.

Matsumoto, Tomomi; Amemiya, Kiyoshi; and Kanai, Yukitomi, to Hitachi, Ltd. Television tuner circuit. 4,326,295, Cl. 455-188.000.

Matsushima, Katsumori: *See*—
Sata, Toshio; and Matsushima, Katsumori, 4,326,257, Cl. 364-508.000.

Matsushima, Takeo: *See*—
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.

Matsushita Electric Industrial Co. Ltd.: *See*—
Kogure, Takuyo; and Kitagawa, Hidemasa, 4,326,224, Cl. 360-65.000.
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,326,112, Cl. 219-10.55F.

Matsushita Electronics Corporation: *See*—
Okamoto, Takio; Atsumi, Tamisuke; Nakagawa, Yoshio; and Akutsu, Hidezo, 4,326,148, Cl. 315-169.200.

Matsuura, Katsumi: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.

Matthews, Donald P., to Dow Chemical Company, The. Hypoglycemic 4-(((1,3,4 thiadiazolyl)benzoic acids, esters and amides. 4,325,959, Cl. 424-270.000.

Matthews, Francis T.: *See*—
Kantesaria, Prabhudas P.; and Matthews, Francis T., 4,325,327, Cl. 122-4.00D.

Matthews, Hugh B., to Sperry Corporation. Geothermal irrigation pump. 4,325,681, Cl. 417-379.000.

Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., to Allegretti & Company. Portable blower-vacuum unit. 4,325,163, Cl. 15-330.000.

Mattuschka, Werner, to Siemens Aktiengesellschaft. Piezoelectric resonators. 4,326,142, Cl. 310-320.000.

Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Combating pests with 2-cycloalkyl-pyrimidin-5-yl-(thiono) (thiol)-phosphoric (phosphonic) acid esters and ester-amides. 4,325,948, Cl. 424-200.000.

Maurer, Fritz: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.

Maurer, Willy: *See*—
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,325,728, Cl. 71-90.000.

Mavriks, George: *See*—
Jukes, John A., 4,325,665, Cl. 411-176.000.

May & Baker Limited: *See*—
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., 4,325,967, Cl. 424-299.000.

Mayerhoefer, Horst: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.

McBride, William R.: *See*—
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.

McCombs, Charles A., to Eastman Kodak Company. Process for preparing 21-lower alkoxyoxalylprogesterones. 4,325,878, Cl. 260-397.100.

McCullion, Francis E., Jr., to Cymaticolor Corporation. Method of color printing. 4,325,631, Cl. 355-77.000.

McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., to United States of America, Energy. Electric heater for nuclear fuel rod simulators. 4,326,122, Cl. 219-544.000.

McCullough, Robert B., to Magnuson Computer Systems, Inc. Data processing apparatus with serial and parallel priority. 4,326,250, Cl. 364-200.000.

McDaniel, Max P., to Phillips Petroleum Company. Impregnated second valence chromium compound in supported catalyst. 4,325,839, Cl. 252-430.000.

McDonnell, Francis R. M.: *See*—
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.

McDowell, Donald J.: *See*—
Czernik, Daniel E.; and McDowell, Donald J., 4,325,559, Cl. 277-235.00B.

McEdwards, Timothy K. Engine sound simulator. 4,325,199, Cl. 46-232.000.

McFarlin, David J., to United Technologies Corporation. Cryoadsorption pumps having panels with zeolite plates. 4,325,220, Cl. 62-55.500.

McGee, William F.; and Mikhael, Wasfy B., to Northern Telecom Limited. Apparatus for coupling a two-way transmission path to a one-way transmitting path and a one-way receiving path. 4,326,109, Cl. 179-170.0NC.

McGraw-Edison Company: *See—*
Burrage, Lawrence M.; and Guertin, Jacques P., 4,325,734, Cl. 75-225.000.
Heinrichs, Frank W., Jr., 4,326,097, Cl. 174-155.000.

McHugh, James D., to General Electric Company. Low axial stiffness thrust bearing. 4,325,583, Cl. 308-9.000.

McKellin, Wilbur H., to Abbott Laboratories. Process for making haloalkyltrialkoxyphenone. 4,326,083, Cl. 568-322.000.

McLean, John R., to Reynolds Metals Company. Sheet material dispensing mechanism. 4,325,519, Cl. 242-75.410.

McMahon, Thomas A.; and Greene, Peter R. Modular athletic playing surface with tuned compliance. 4,325,546, Cl. 272-3.000.

McNair, Willie L.; Lipke, Donald L.; Van Wambeck, Stanley H.; and Huelsman, Conrad J., to Baylor Company. Control system for an electro-magnetic brake. 4,326,236, Cl. 361-170.000.

McNinney, Richard P., Jr.; and Thompson, Robert E. Blast room floor. 4,325,292, Cl. 98-115.0SB.

McRae, Edwin C. Torque converter mechanism. 4,325,270, Cl. 74-677.000.

Mead Corporation, The: *See—*
Cole, John N.; and Hettel, David A., 4,325,899, Cl. 264-86.000.
Erin, Tim, 4,326,204, Cl. 346-75.000.

Meckler, Milton. Column supported platform and lift with prestressed damping system. 4,325,654, Cl. 405-196.000.

Medway, John G.: *See—*
Blackwood, Rodger; and Medway, John G., 4,325,684, Cl. 425-62.000.

Meiji Seika Kaisha, Ltd.: *See—*
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.

Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, to LGZ Landis & Gyr Zug AG. Apparatus for measuring liquid flow. 4,325,262, Cl. 73-861.280.

Memorial Hospital for Cancer and Allied Diseases: *See—*
Miodownik, Saul, 4,325,382, Cl. 128-673.000.

Mena, Walter M.: *See—*
Coulter, Wallace H.; and Mena, Walter M., 4,325,909, Cl. 422-63.000.

Menzel, Gunter, to Siemens Aktiengesellschaft. Method for preparing coarse-crystal or single-crystal metal films. 4,325,776, Cl. 156-610.000.

Menzie, Larry L., to O'Neill, James G. Lock plug for glad hand brake line coupler. 4,325,237, Cl. 70-14.000.

Merck & Co., Inc.: *See—*
Kang, Kenneth S.; Colegrove, George T.; and Veeder, George T., 4,326,052, Cl. 536-1.000.
Kang, Kenneth S.; and Veeder, George T., 4,326,053, Cl. 536-1.000.
Kollomitsch, Janos; and Patchett, Arthur A., 4,325,961, Cl. 424-273.00R.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,325,940, Cl. 424-70.000.

Mermis, Ronald F. Thermodynamic flotation engine. 4,325,216, Cl. 60-496.000.

Merrell Toraude et Compagnie: *See—*
Bey, Philippe; and Jung, Michel, 4,326,071, Cl. 562-574.000.

Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., to International Business Machines Corporation. Sequential successive approximation analog-to-digital converter. 4,326,192, Cl. 340-347.0AD.

Merriman Holbrook, Inc.: *See—*
Winter, Robert A.; and Steger, David J., 4,325,537, Cl. 254-405.000.

Meshreki, Makram H.: *See—*
Kruse, Walter M.; and Meshreki, Makram H., 4,326,072, Cl. 562-587.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Bschorr, Oskar; and Laudien, Eckehard, 4,325,458, Cl. 181-227.000.
Bschorr, Oskar, 4,325,461, Cl. 181-286.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.
Grunewald, Gerhard; and Kriebel, Manfred, 4,325,782, Cl. 159-47.00R.

Metcalf, Brian W.; and Adams, Jerry L., to Richardson-Merrell Inc. Production of intermediates for enzyme inhibitors. 4,325,877, Cl. 260-349.000.

Metrailer, William J., to Exxon Research & Engineering Co. Catalytic fluid coking and gasification process. 4,325,815, Cl. 208-127.000.

Metros, Gus: *See—*
Peters, James K., II; and Metros, Gus, 4,325,701, Cl. 440-113.000.

Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., to Stamicarbon, B.V. Process for the preparation of a 2-pyrrolidone. 4,325,872, Cl. 260-326.5FN.

Michael, Vesta F., to Fiber Glass Systems, Inc. Method for the formation of corrosion-resistant bodies and apparatus for forming the same. 4,325,766, Cl. 156-171.000.

Michaels, Stephen L.: *See—*
Martin, Patrick H.; and Michaels, Stephen L., 4,326,082, Cl. 564-497.000.

Micro-Acoustics Corporation: *See—*
Dieter, Norman H., Jr.; and Peterhoff, Edward, 4,326,285, Cl. 369-137.000.

Micro Air Systems, Inc.: *See—*
Reams, Donald J., 4,325,394, Cl. 134-141.000.

Microphase Corporation: *See—*
Ferri, Romano I., 4,326,180, Cl. 333-246.000.

Mikhael, Wasfy B.: *See—*
McGee, William F.; and Mikhael, Wasfy B., 4,326,109, Cl. 179-170.0NC.

Milevski, Tome. Paint repellent composition and method. 4,325,745, Cl. 134-4.000.

Milkowski, Wolfgang: *See—*
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.

Miller, George A.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.

Miller, Gordon G., Jr., to Gordon G. Miller & Associates, Inc. Battery cleaning apparatus. 4,325,415, Cl. 141-1.000.

Miller, John H. Pet litter separator. 4,325,822, Cl. 209-251.000.

Miller, Robert C.: *See—*
Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., 4,325,762, Cl. 156-86.000.

Miller, Robert J.: *See—*
Bier, Kenneth C.; and Miller, Robert J., 4,325,339, Cl. 123-440.000.

Miller, Stephen J., to Chevron Research Company. Lubricating oil stabilization. 4,325,805, Cl. 208-58.000.

Miller, Thomas G.; and Rogers, Billie O., to United States of America, Army. Power measuring device for pulsed lasers. 4,325,252, Cl. 73-190.0EW.

Milligan, Edward J., to Western Electric Company, Inc. Heat treatment for high chromium high carbon stainless steel. 4,325,758, Cl. 148-135.000.

Milliken, Douglas A.: *See—*
Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., 4,325,163, Cl. 15-330.000.

Milner, Nathan. Fastener and method of fastening. 4,325,175, Cl. 29-444.000.

Mingers, Peter F.: *See—*
Verboom, Hermann; Mingers, Peter F.; and Appenzeller, Valentin, 4,325,170, Cl. 29-116.0AD.

Mink, Robert I.: *See—*
Epstein, Ronald A.; and Mink, Robert I., 4,325,836, Cl. 252-429.00B.

Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, to Licentia Patent-Verwaltungs GmbH; and Telefonbau und Normalzeit GmbH. Telephone amplifier circuit. 4,326,106, Cl. 179-81.00B.

Minnesota Mining & Manufacturing Company: *See—*
Achten, David J.; and Fritts, Robert W., 4,325,197, Cl. 40-610.000.
Rasmussen, Jerald K., 4,326,049, Cl. 526-91.000.

Minolta Camera Kabushiki Kaisha: *See—*
Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,325,617, Cl. 354-31.000.
Yamada, Seiji, 4,325,615, Cl. 354-24.000.

Minorikawa, Hitoshi: *See—*
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.

Miodownik, Saul, to Memorial Hospital for Cancer and Allied Diseases. Process and apparatus for the real time adaptive filtering of catheter pressure measurements. 4,325,382, Cl. 128-673.000.

Mishima, Yasuhiro: *See—*
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.

Miszak, Pawel, to Sulzer Brothers Limited. Vapor generator having a pair of combustion chambers. 4,325,328, Cl. 122-6.00A.

Mita Industrial Co., Ltd.: *See—*
Murata, Nacaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.

Mitchell, Samuel S.; and Vijlee, Abbas F., to Schroeder Brothers Corporation. Unhooking dirty filter alarm. 4,325,824, Cl. 210-90.000.

Mitel Corporation: *See—*
Vaughan, Brian J. N.; and Pascas, Brian J., 4,326,105, Cl. 179-16.0EA.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kobayashi, Hiroo, 4,326,150, Cl. 315-325.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.

Mitsuda, Yutaka: *See—*
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,325,838, Cl. 252-429.00B.

Miyajima, Keiji: *See—*
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.

Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, to Alps Electric Co., Ltd. Inked ribbon cartridge having a guide plate. 4,325,645, Cl. 400-196.100.

Miyaka, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, to Asahi Glass Company, Ltd. Process for producing modified polytetrafluoroethylene. 4,326,046, Cl. 525-276.000.

Miyake, Osamu: *See—*
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,325,313, Cl. 112-103.000.

Miyata, Junji: *See—*
Bando, Niro; Watanabe, Haruo; and Miyata, Junji, 4,325,452, Cl. 180-306.000.

Miyazawa, Kiyoshi, to Sankyo Electric Company Limited. Scroll-type compressor with rotation prevention and anti-deflection means. 4,325,683, Cl. 418-55.000.

Miyo, Shinichi: *See—*
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, 4,325,338, Cl. 123-407.000.

Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, to Hitachi, Ltd. Voltage non-linear resistor. 4,326,187, Cl. 338-21.000.

Mizote, Hiroyuki: *See—*
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.

Mizuhara, Howard; and Cox, Ronald W., to GTE Products Corporation. Flexible brazing alloy tape and method of making same. 4,325,754, Cl. 148-22.000.

Mizukami, Norio: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.

Mlynar, Vladimir: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.

Mobil Oil Corporation: *See—*
Gross, Benjamin, 4,325,814, Cl. 208-120.000.

Moeller, Horst. Delabeler. 4,325,775, Cl. 156-584.000.

Mogi, Takao, to Sony Corporation. Television receiver. 4,326,220, Cl. 358-191.100.

Mohring, Edgar; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparaton of low molecular weight polyhydroxyl compounds. 4,326,086, Cl. 568-388.000.

Mohtai, Tsuneaki: *See—*
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Mokris, Michael M., to Pulsonics Corporation. Storage bin activator device and method for restoring bulk material free flow. 4,325,495, Cl. 222-1.000.

Molecular Energy Corp.: *See—*
Houser, Clifford F., 4,325,355, Cl. 126-263.000.

Molins Limited: *See—*
Bolt, Reginald C.; Dowding, John G.; and Williams, Robert E., 4,325,250, Cl. 73-38.000.

Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., to E. R. Squibb & Sons, Inc. Method for preparing the optically active isomer of 2,2-[[5-[3-[(1,1-dimethylethyl)amino]-2-hydroxypropoxy]-1,2,3,4-tetrahydro-2,3-naphthalene-diyl]bis(oxy)]bis[N,N-dipropylacetamide]. 4,326,076, Cl. 564-156.000.

Monsanto Company: *See—*
Baer, Massimo, 4,325,865, Cl. 523-205.000.
Cohen, Saul M.; and LeBlanc, John R., 4,326,057, Cl. 544-221.000.
Yu, Jing-peir; and Bromely, James E., 4,325,765, Cl. 156-167.000.

Montedison S.p.A.: *See—*
Dal Moro, Anacleto; Pinamonti, Franco; and Capizzi, Amedeo, 4,325,941, Cl. 424-84.000.

Moore, Robert C., to Tropel, Inc. Phase modulation of grazing incidence interferometer. 4,325,637, Cl. 356-359.000.

Moreland, Gerald W., to Hydro Air Industries, Inc. Air supply system for spas. 4,325,149, Cl. 4-488.000.

Morgan, Chester S., Jr.: *See—*
McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., 4,326,122, Cl. 219-544.000.

Morgan, Stuart N.: *See—*
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.

Mori, Yoshikatsu, to Sumitomo Electric Industries, Ltd. Cutting tool. 4,325,664, Cl. 409-234.000.

Morikawa, Teruo: *See—*
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.

Moriya, Yoshihisa: *See—*
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,325,838, Cl. 252-429.00B.

Morris, David G., to Institut Cerac S.A. Method of producing large objects from rapidly quenched non-equilibrium powders. 4,325,895, Cl. 264-23.000.

Morris, Ronald M.: *See—*
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.

Morrison, Andrew I., to Knoll International, Inc. Furniture systems. 4,325,597, Cl. 312-258.000.

Morrison, Howard J.: *See—*
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.

Morrison-Knudsen Co., Inc.: *See—*
Erfurth, Frank R., 4,325,308, Cl. 105-280.000.

Morton, David C.: *See—*
Williams, Ferd E.; and Morton, David C., 4,326,007, Cl. 428-333.000.

Motonami, Masanao: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,325,569, Cl. 280-804.000.

Motorola, Inc.: *See—*
Chamberlin, George P., 4,326,247, Cl. 364-200.000.
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,326,264, Cl. 364-900.000.
Jarrett, Robert B.; and Pace, Wilson D., 4,326,135, Cl. 307-355.000.
Shaw, Mark L.; and Freimark, Ronald J., 4,326,171, Cl. 330-256.000.

Moulder, George R.: *See—*
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.

Moussette, Robert A. Pneumatic headset. 4,325,453, Cl. 181-135.000.

Mowbray, Dorian F., to Lucas Industries Limited. Electromagnetic devices. 4,326,139, Cl. 310-42.000.

Moyse, Clarence L.: *See—*
Moyse, Richard J.; and Moyse, Clarence L., 4,325,769, Cl. 156-217.000.

Moyse, Richard J.; and Moyse, Clarence L. Method of making bellows. 4,325,769, Cl. 156-217.000.

MSI Data Corporation: *See—*
Culp, David W.; and Mastell, Dale P., 4,326,102, Cl. 179-2.00C.

Muck, Gerhard; and Peter, Kurt. Cartridge load for revolvers. 4,325,198, Cl. 42-89.000.

Mueller, Walter B., to W. R. Grace & Co. Processing and product enhancement additives for polyolefin film. 4,325,850, Cl. 524-228.000.

Mueller, Wolfgang: *See—*
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.

Muhl, Andrew H., Sr. Temperature control system for an electrode type liquid heater. 4,326,120, Cl. 219-286.000.

Mukai, Kunio: *See—*
Okabe, Takayuki; Hirano, Masachika; and Mukai, Kunio, 4,326,058, Cl. 544-243.000.

Muller, Hanns P.: *See—*
Mohring, Edgar; Muller, Hanns P.; and Wagner, Kuno, 4,326,086, Cl. 568-388.000.

Muraoka, Yasuhiko: *See—*
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.

Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,325,626, Cl. 355-3.0DR.

Murata, Shinji: *See—*
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.

Murdock, Robert E., to Kearney-National Inc. Electric cutout. 4,326,184, Cl. 337-168.000.

Murphy, Gregory: *See—*
Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.

Muzio, Lawrence J.: *See—*
Arand, John K.; Muzio, Lawrence J.; and Teixeira, Donald P., 4,325,924, Cl. 423-235.000.

Muzzell, Stephen E., to Gulf & Western Manufacturing Company. Seat construction. 4,325,542, Cl. 267-85.000.

Myers, John P.: *See—*
Chain, Franklin O.; and Myers, John P., 4,325,666, Cl. 414-24.500.

Nabeta, Teiichi: *See—*
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.

Nadella: *See—*
Mallet, Bernard, 4,325,593, Cl. 308-163.000.
Stephan, Gerard, 4,325,566, Cl. 280-668.000.

Nagahata, Tsutomu: *See—*
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.

Nagai, Yuji: *See—*
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Wire guide for a bicycle. 4,325,269, Cl. 74-501.00R.

Nagata, Shoji: *See—*
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.

Nagatomo, Hideo: *See—*
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.

Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, to Nippon Kayaku Kabushiki Kaisha. Benzenethiocarbamate derivatives. 4,325,968, Cl. 424-300.000.

Nakagawa, Yoshio: *See—*
Okamoto, Takio; Atsumi, Tamisuke; Nakagawa, Yoshio; and Akutsu, Hidezo, 4,326,148, Cl. 315-169.200.

Nakajima, Minoru: *See—*
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Nakajima, Yoshikage: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,325,974, Cl. 424-343.000.

Nakajima, Yoshio: *See—*
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.

Nakamura, Michiharu: *See*—
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Nakamura, Teruo; and Otani, Masami, to Nissan Motor Company, Limited; and Diesel Kiki Company, Limited. Device responsive to unusual temperature change in refrigerant compressor. 4,325,222, Cl. 62-126.000.

Nakaoka, Masaki: *See*—
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.

Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Error alarm system in a combined electronic weighing scale and electronic cash register. 4,325,441, Cl. 177-25.000.

Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, to Olympus Optical Company Limited. Electrophotographing method. 4,325,625, Cl. 355-3.0SC.

Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, to Hitachi, Ltd. Slotted shadow mask having apertures spaced to minimize moire. 4,326,147, Cl. 313-403.000.

Nalamwar, Ashok L.: *See*—
Galfo, Christopher H.; and Nalamwar, Ashok L., 4,325,984, Cl. 427-38.000.

Nara, Terukazu: *See*—
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.

Narayan, Thirumurti; and Patton, John T., Jr., to BASF Wyandotte Corporation. Process for the preparation of polyisocyanurate dispersions modified with halogenated alcohols and compositions prepared therefrom. 4,326,043, Cl. 521-137.000.

Narumi China Corporation: *See*—
Yamaguchi, Teruo, 4,326,095, Cl. 174-52.0FP.

Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, to Sumitomo Metal Industries, Ltd. Method for producing steel plate having excellent resistance to hydrogen induced cracking. 4,325,748, Cl. 148-2.000.

Nasuno, Toshihiro: *See*—
Otoi, Kiyoshi; and Nasuno, Toshihiro, 4,325,741, Cl. 106-308.00N.

Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,943, Cl. 424-177.000.

Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,944, Cl. 424-177.000.

Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,945, Cl. 424-177.000.

National Distillers & Chemical Corp.: *See*—
Braus, Harry, 4,326,088, Cl. 568-638.000.

National Reseach Development Corporation: *See*—
Teasdale, Raymond G., 4,325,653, Cl. 405-68.000.

National Research Development Corporation: *See*—
Shanks, Ian A., 4,326,279, Cl. 368-240.000.

National Semiconductor Corporation: *See*—
Trueblood, Richard K., 4,326,214, Cl. 357-74.000.

Naumann, Rolf: *See*—
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.

Naylor, Neal & Uilkema: *See*—
Freeman, James W., 4,325,667, Cl. 414-139.000.

NCR Canada LTD - NCR Canada LTEE: *See*—
de la Guardia, Mario F., 4,326,258, Cl. 364-515.000.

Neal, Edwin S. Overhead glass stemware rack. 4,325,486, Cl. 211-71.000.

NECCHI Societa per Azioni: *See*—
Bar, Alfredo, 4,325,680, Cl. 417-569.000.

Neotronics Limited: *See*—
Bushman, John A., 4,326,200, Cl. 340-632.000.

Nestor Associates: *See*—
Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., 4,326,259, Cl. 364-715.000.

Nestor, Charles R., to General Motors Corporation. Pigtail assembly. 4,325,600, Cl. 339-116.00C.

Netherton, Charles F.: *See*—
Jandeska, William F., Jr.; and Netherton, Charles F., 4,325,757, Cl. 148-103.000.

Neti, Radhakrishna M.: *See*—
Sawa, Kenneth B.; and Neti, Radhakrishna M., 4,325,912, Cl. 422-95.000.

Neufeld, Jacob. Evaluation of the interaction with radiant energy of substances traversed by a bore hole. 4,326,129, Cl. 250-262.000.

Neukam, Theo: *See*—
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, 4,326,051, Cl. 528-386.000.

Neumann, Berthold: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.

Neuzil, Richard W., to UOP Inc. Process for the separation of metaxylene. 4,326,092, Cl. 585-828.000.

Nevyas, Herbert J. Instrument for inserting and removing intraocular lens. 4,325,375, Cl. 128-321.000.

New York Institute of Technology: *See*—
Glenn, William E., 4,325,381, Cl. 128-660.000.

Newman, Raymond A., to NP Industries, Inc. Digital phase locked loop frequency control system. 4,326,173, Cl. 331-1.00A.

NGK Insulators, Ltd.: *See*—
Oda, Isao; and Kaneno, Masayuki, 4,326,038, Cl. 501-41.000.

NGK Spark Plug Co., Ltd.: *See*—
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,325,710, Cl. 51-309.000.

Niem, Wolfgang, to Union Special G.m.b.H. Thread control mechanism for sewing machines. 4,325,314, Cl. 112-199.000.

Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., to United States of America, Energy. Cryogenic structural support. 4,325,530, Cl. 248-317.000.

Nieuwkamp, Johannes G. M.: *See*—
Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,325,872, Cl. 260-326.5FN.

Nikolic, Branko: *See*—
De Bliquy, Michael C.; and Nikolic, Branko, 4,325,648, Cl. 403-218.000.

Nilsen, Arthur A.: *See*—
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.

Nilson, Nils B., to KeNova AB. Disposable container for a syringe. 4,325,369, Cl. 128-218.00D.

Nink, Horst: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.

Nippon Electric Co., Ltd.: *See*—
Ohtani, Tetsuro, 4,326,177, Cl. 372-92.000.
Sakoe, Hiroaki, 4,326,101, Cl. 179-1.0SD.
Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, 4,325,763, Cl. 156-89.000.
Yanagisawa, Masahiro, 4,326,229, Cl. 360-135.000.

Nippon Electric Industry Co., Ltd.: *See*—
Sasaki, Kyoichi, 4,325,164, Cl. 16-55.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nishizawa, Jun-ichi; and Yoshida, Takashi, 4,326,209, Cl. 357-22.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Adaniya, Takeshi; and Ohmura, Masaru, 4,325,790, Cl. 204-27.000.
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.

Nippon Mining Co., Ltd.: *See*—
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.

Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Umeda, Naoki; and Abe, Seiko, 4,325,344, Cl. 123-549.000.
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,325,336, Cl. 123-350.000.

Nippon Steel Corporation: *See*—
Seki, Masahiko; and Io, Yukito, 4,325,540, Cl. 266-243.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Okamoto, Yoshiharu; Horikawa, Izumi; and Komaki, Shozo, 4,326,294, Cl. 455-139.000.

Nippondenso Co., Ltd.: *See*—
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.

Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, to Tokyo Shibaura Denki Kabushiki Kaisha. Prechamber cup for an internal combustion engine. 4,325,334, Cl. 123-270.000.

Nishida, Kouji: *See*—
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,325,313, Cl. 112-103.000.

Nishikawa, Masaji: *See*—
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.

Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Electronic timepiece. 4,326,277, Cl. 368-86.000.

Nishimoto, Takehiko: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.

Nishimura, Yoshiharu: *See*—
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,326,254, Cl. 364-466.000.

Nishiwaki, Susumu; and Satoh, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Lightning arrester. 4,326,232, Cl. 361-127.000.

Nishiwaki, Susumu: *See*—
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,233, Cl. 361-127.000.

Nishizawa, Jun-ichi; and Yoshida, Takashi, to Nippon Gakki Seizo Kabushiki Kaisha. Static induction transistor. 4,326,209, Cl. 357-22.000.

Nissan Motor Company, Limited: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,325,271, Cl. 74-869.000.
Kanegae, Hidetoshi, 4,325,251, Cl. 73-119.00A.
Kawamoto, Tamio, 4,325,557, Cl. 277-65.000.
Kuboto, Hitoshi; and Shimizu, Kazuaki, 4,325,582, Cl. 303-24.00F.
Nakamura, Teruo; and Otani, Masami, 4,325,222, Cl. 62-126.000.
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Yamaguchi, Hiroshi, 4,325,347, Cl. 123-571.000.

Nobles, Elon J., to Econo-Therm Energy Systems Corporation. Means and method for sealing heat exchanger walls. 4,325,171, Cl. 29-157.30C.

Nomura, Toshio: *See*—
Date, Tasuku; and Nomura, Toshio, 4,325,894, Cl. 261-66.000.

Nonnenmacher, Gerhard, to Robert Bosch GmbH. Arrangement for the regulation of the output and for limiting the output fluid pressure of an adjustable pump. 4,325,677, Cl. 417-218.000.

Norlin Industries, Inc.: *See*—
Gross, Glenn M., 4,326,260, Cl. 364-718.000.

Northern Telecom Limited: *See*—
Hope nee Swiecicki, Tomasz S., 4,325,212, Cl. 57-15.000.
McGee, William F.; and Mikhael, Wasfy B., 4,326,109, Cl. 179-170.0NC.
Zuber, Bretislav P., 4,325,214, Cl. 57-293.000.

Norton Company: *See*—
Kenshol, Kenneth W., 4,325,512, Cl. 239-84.000.

Novikoff, Eugene B., to Knogo Corporation. Method and apparatus for the promotion of selected harmonic response signals in an article detection system. 4,326,198, Cl. 340-572.000.

NP Industries, Inc.: *See*—
Newman, Raymond A., 4,326,173, Cl. 331-1.00A.

Oakland Corporation, The: *See*—
Wallace, Richard B., 4,325,985, Cl. 427-54.100.

Oana, Masao: *See*—
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,326,254, Cl. 364-466.000.

O'Brien, Joseph P.: *See*—
Papay, Andrew G.; and O'Brien, Joseph P., 4,325,827, Cl. 252-51.50A.

O'Connell, J. Garland: *See*—
Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.

Oda, Isao; and Kaneno, Masayuki, to NGK Insulators, Ltd. Sealing composition and sealing method. 4,326,038, Cl. 501-41.000.

Odetics, Inc.: *See*—
Bartholet, Stephen J.; and Chvostal, Paul J., 4,326,115, Cl. 219-56.100.

Oehrig, Kenneth H., to GTE Automatic Electric Labs Inc. Coin telephone monitor circuit. 4,326,103, Cl. 179-6.30R.

Office National d'Etudes etc.: *See*—
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, 4,325,675, Cl. 416-223.00R.

Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, to Asahi Kasei Kogyo Kabushiki Kaisha. Image forming method and apparatus therefor. 4,325,629, Cl. 355-27.000.

Ogawa, Hisashi: *See*—
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,325,569, Cl. 280-804.000.

Ogawa, Oyuki: *See*—
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.

Ohara, Osamu: *See*—
Saito, Koichi; and Ohara, Osamu, 4,325,858, Cl. 524-524.000.

Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Optical resolution of acylthiopropionic acid. 4,325,886, Cl. 260-455.00R.

Ohba, Yasuhiro: *See*—
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Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, to Sony Corporation. Printed circuit board. 4,326,239, Cl. 361-410.000.

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Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,325,271, Cl. 74-869.000.

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Sasaki, Masao, 4,325,646, Cl. 400-196.100.

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Suzuki, Hiromichi; and Okikawa, Susumu, 4,326,215, Cl. 357-81.000.

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Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.

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Blaser, Reinhard; Olach, Klaus; and Schaldach, Max, 4,325,384, Cl. 128-696.000.

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Rittenbach, Otto E.; and Olesch, Reinhard G., 4,326,272, Cl. 367-93.000.

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Popplewell, James M.; and Dempsey, Martin H., 4,325,746, Cl. 134-10.000.
Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, 4,325,777, Cl. 156-620.000.

Olmsted, Bruce C., Jr., to Manville Service Corporation. Method of preparing diatomite for rapid calcination. 4,325,844, Cl. 252-448.000.

Olszewski, Egon: *See*—
Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, 4,325,268, Cl. 74-492.000.

Olympus Optical Co., Ltd.: *See*—
Hosoda, Seiichi, 4,325,618, Cl. 354-33.000.
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 350-96.200.
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.
Komiya, Osamu, 4,325,374, Cl. 128-303.150.
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Osanai, Akira, 4,326,225, Cl. 360-74.100.

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Gerling, John E.; and O'Meara, John P., 4,326,114, Cl. 219-10.55A.

O'Meara, Michael F.: *See*—
Given, Arthur P.; and O'Meara, Michael F., 4,326,263, Cl. 364-900.000.

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Omori, Shigenori, to Yoshida Kogyo K.K. Apparatus for manufacturing coiled coupling elements for slide fasteners. 4,325,184, Cl. 29-766.000.

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O'Neill, James G.: *See*—
Menzie, Larry L., 4,325,237, Cl. 70-14.000.

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Foster, Francis S., 4,325,258, Cl. 73-642.000.

Optsonic Research Associates, Ltd.: *See*—
Horn, Michael, 4,325,256, Cl. 73-607.000.

Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive: *See*—
Hale, John M.; and Weber, Eugen, 4,325,797, Cl. 204-195.00P.

Ormiston, Peter T., to Solartron Electronic Group Limited, The. Pyrotechnic devices and systems and firing circuits therefor. 4,325,304, Cl. 102-200.000.

Ortho Diagnostic Systems Inc.: *See*—
Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.
Ortho Diagnostics, Inc.: *See*—
Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, 4,325,483, Cl. 209-3.100.
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Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, 4,325,772, Cl. 156-294.000.
Osakabe, Kuniharu: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Automatic reverse cassette tape recorder. 4,326,225, Cl. 360-74.100.
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Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,325,715, Cl. 55-158.000.
Ostapchuk, Stanislav V.: *See*—
Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
Otani, Masami: *See*—
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Otis Engineering Corporation: *See*—
Roark, James T.; and Hayter, Steven R., 4,325,534, Cl. 251-1.00A.
Otoi, Kiyoshi; and Nasuno, Toshihiro, to Kanebo, Ltd. Fibroin-coated pigment and processes for producing same. 4,325,741, Cl. 106-308.00N.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air conditioner system. 4,325,426, Cl. 165-2.000.
Otten, David: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.
Otto, Dennis L., to Timken Company, The. Sealed and unitized bearing. 4,325,591, Cl. 308-187.200.
Otto Durr: *See*—
Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, 4,325,161, Cl. 15-304.000.
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, to Kabushiki Kaisha Medos Kenkyusho. Endoscope. 4,325,362, Cl. 128-4.000.
Outboard Marine Corporation: *See*—
Hicks, John E., 4,325,446, Cl. 180-89.170.
Ovarnstrom, Bengt G. L. Method and apparatus for filling seedling pots. 4,325,200, Cl. 47-1.00A.
Owada, Shuji: *See*—
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Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., to Xicor, Inc. Integrated rise-time regulated voltage generator systems. 4,326,134, Cl. 307-268.000.
Owens-Corning Fiberglas Corporation: *See*—
Froberg, Magnus L., 4,325,724, Cl. 65-121.000.
Roberts, Michael G.; and Tanner, Joseph F., 4,325,854, Cl. 524-476.000.
Owens-Illinois, Inc.: *See*—
Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., 4,325,762, Cl. 156-86.000.
Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.
Owens, William K.; and Kahermanes, Steven R., to Fairchild Camera and Instrument Corp. Preset circuit for information storage devices. 4,326,270, Cl. 365-218.000.
Oxford Pendaflex Corp.: *See*—
Solomon, Jack, 4,325,595, Cl. 312-183.000.
Oy, Hollming: *See*—
Hirvonen, Reijo, 4,325,560, Cl. 280-5.00D.
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Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, 4,325,341, Cl. 123-472.000.
Ozbey, Ahmet M. Derriere exerciser. 4,325,379, Cl. 128-540.000.
Ozol, Yan-Voldemar Y.: *See*—
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P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG: *See*—
Berneking, Hans-Jurgen, 4,325,527, Cl. 248-394.000.
P T Components, Inc.: *See*—
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.
Pace, Joseph A., to R. P. Scherer Corporation. Two-piece hardshell, soluble and digestible liquid containing gelatin capsule. 4,325,761, Cl. 156-69.000.
Pace, Wilson D.: *See*—
Jarrett, Robert B.; and Pace, Wilson D., 4,326,135, Cl. 307-355.000.
Page, Robert E.: *See*—
Karr, Gerald W.; and Page, Robert E., 4,325,518, Cl. 242-68.000.
Paige Company Containers, Inc., The: *See*—
Paige, Richard E., 4,325,493, Cl. 220-416.000.
Paige, Richard E., to Paige Company Containers, Inc., The. Collapsible carton. 4,325,493, Cl. 220-416.000.
Panayappan, Ramanathan; and Venezky, David L., to United States of America, Navy. Method and composition for cleaning metal surfaces with a film-forming composition. 4,325,744, Cl. 134-4.000.
Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Fuel and lubricating compositions containing N-hydroxymethyl succinimides. 4,325,827, Cl. 252-51.50A.
Paper Converting Machine Company: *See*—
Spalding, Michael H., 4,325,475, Cl. 198-429.000.
Paris, Sandra L.: *See*—
Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., 4,325,918, Cl. 423-10.000.
Parker, Carl D.: *See*—
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., 4,325,580, Cl. 299-39.000.
Pascas, Brian J.: *See*—
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Paschall, Douglas C.: *See*—
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Pashinin, Boris P.: *See*—
Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
Pasierb, Slawomir: *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Pastine, Donald J., to United States of America, Navy. Electrical augmentation of detonation wave. 4,325,305, Cl. 102-201.000.
Patchett, Arthur A.: *See*—
Kollonitsch, Janos; and Patchett, Arthur A., 4,325,961, Cl. 424-273.00R.
Patton, John T., Jr.: *See*—
Narayan, Thirumurti; and Patton, John T., Jr., 4,326,043, Cl. 521-137.000.
Paul Wurth S.A.: *See*—
Ulveling, Leon, 4,325,312, Cl. 110-347.000.
Paynton, Richard H.; and Paynton, William C., to Improved Consumers Products, Inc. Chimney cap and securement. 4,325,291, Cl. 98-67.000.
Paynton, William C.: *See*—
Paynton, Richard H.; and Paynton, William C., 4,325,291, Cl. 98-67.000.
Peck, Arland A.: *See*—
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.
Pederson, Richard J.: *See*—
Touchton, James J.; and Pederson, Richard J., 4,326,226, Cl. 360-77.000.
Pedroli, Walter E., to Polaroid Corporation. Self-developing type film processor kit. 4,325,624, Cl. 354-304.000.
Peel, Eric; and Dalton, Colin C., to British Petroleum Company Limited, The. Fermentation process for producing higher plant cells. 4,326,034, Cl. 435-241.000.
Pellman, Arnold: *See*—
Dreyfus, Marc G.; and Pellman, Arnold, 4,325,640, Cl. 356-376.000.
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A. Method and apparatus for producing sapphire tubes. 4,325,917, Cl. 422-249.000.
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, to Farmitalia Carlo Erba S.p.A. 4-Demethoxy-4'-deoxydoxorubicin. 4,325,947, Cl. 424-180.000.
Penco, Sergio: *See*—
Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
Pentanyl Technologies, Inc.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,325,802, Cl. 208-10.000.
Peoples, John T. Single tone detector. 4,326,261, Cl. 364-724.000.
Pepe, Russell J., to Singer Company, The. Dual encoded switching matrix. 4,326,194, Cl. 340-365.00R.
PepsiCo, Inc.: *See*—
Tibbetts, Merrick S.; and Templeman, Gareth J., 4,325,743, Cl. 127-46.200.
Pereman, Gordon F.: *See*—
Kellar, John D.; and Pereman, Gordon F., 4,325,723, Cl. 65-104.000.
Perepelkin, Vitaly P.: *See*—
Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
Perez, Donald E.: *See*—
Gargano, Robert; Perez, Donald E.; and Williams, David K., 4,326,059, Cl. 544-243.000.
Permacel: *See*—
Korpman, Ralf, 4,325,770, Cl. 156-230.000.
Perna, Jiulio, to Bunker Ramo Corporation. Communication system and means for interconnection of same. 4,326,107, Cl. 179-98.000.
Peron, Mario: *See*—
Christ, Alfred; and Peron, Mario, 4,325,584, Cl. 308-9.000.
Perry, Dale E., Jr. Watch mounting device. 4,326,280, Cl. 368-277.000.

Persson, Carl G.: *See*—
Kjellin, Per G.; and Persson, Carl G., 4,325,956, Cl. 424-253.000.
Persson, John A., to Lectromelt Corporation. Electrode contact assembly. 4,326,093, Cl. 373-101.000.
Pesch, Jurgen, to G. Siempelkamp GmbH & Co. Method of operating a platen press. 4,325,898, Cl. 264-40.500.
Peter, Kurt: *See*—
Muck, Gerhard; and Peter, Kurt, 4,325,198, Cl. 42-89.000.
Peterhoff, Edward: *See*—
Dieter, Norman H., Jr.; and Peterhoff, Edward, 4,326,285, Cl. 369-137.000.
Peters, James K., II; and Metros, Gus. Protective device. 4,325,701, Cl. 440-113.000.
Peters, Kenneth D., to UOP Inc. Multiple stage hydrocarbon conversion with gravity flowing catalyst particles. 4,325,806, Cl. 208-64.000.
Peters, Kenneth D., to UOP Inc. Multiple stage hydrocarbon conversion with gravity flowing catalyst particles. 4,325,807, Cl. 208-64.000.
Petersen, Joseph C.: *See*—
Plancher, Henry; and Petersen, Joseph C., 4,325,738, Cl. 106-273.00N.
Petersen, Walter J.: *See*—
Witt, Robert H.; and Petersen, Walter J., 4,325,211, Cl. 56-15.800.
Pethis, James J., to Textron Inc. Self-contained pre-loaded antifriction bearing assembly. 4,325,590, Cl. 308-184.00R.
Petrocci, Alfonso N.: *See*—
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,325,940, Cl. 424-70.000.
Petrolite Corporation: *See*—
Victor, Joe M., 4,326,164, Cl. 324-71.00R.
Phillips, Charles O. Belt guiding device. 4,325,703, Cl. 474-130.000.
Phillips Petroleum Company: *See*—
Bagnetto, Lucien J., Jr., 4,325,708, Cl. 44-58.000.
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., 4,325,837, Cl. 252-429.00B.
Eddy, William R., 4,325,476, Cl. 198-448.000.
McDaniel, Max P., 4,325,839, Cl. 252-430.000.
Phipps, Roger N. Bicycle trailer. 4,325,564, Cl. 280-204.000.
Piccini, Silvio D. Kicking device. 4,325,548, Cl. 273-55.00B.
Pickering, John F., to Lucas Industries Limited. Vehicle load sensing arrangement. 4,325,581, Cl. 303-22.00R.
Pigeon, Michel; and Saglio, Robert, to Commissariat a l'Energie Atomique. Correcting circuit for differential pick-up, comprising digital means. 4,326,166, Cl. 324-225.000.
Pike, John E.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,325,875, Cl. 260-346.220.
Pimentel, Alberto: *See*—
DeMan, Pierre; Pimentel, Alberto; Ben Sadou, Jean-Claude; and de Riviere, Charles, 4,326,293, Cl. 455-72.000.
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Pinetree Service Corporation: *See*—
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Pioneer Electronic Corporation: *See*—
Sato, Reisuke; and Sugai, Yoshiro, 4,326,297, Cl. 455-213.000.
Pirovano, Camillo; and Vergani, Umberto. Feed conveyor. 4,325,479, Cl. 198-733.000.
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Pistor, Max; and Pistor, Ferdinand. Electric light fixture. 4,326,243, Cl. 362-368.000.
Pitney Bowes Inc.: *See*—
Crowley, Raymond R.; Daniels, Edward P.; and Holtz, Earl B., 4,325,440, Cl. 177-25.000.
Pivar, Stuart, to American Microcar Incorporated. Three-wheeled, motor-powered, pedal-started vehicle. 4,325,448, Cl. 180-215.000.
Plagge, Vernon L.; and Rively, Clair M., to Westinghouse Electric Corp. Base and terminal-pin assembly for electric lamps and similar devices. 4,326,146, Cl. 313-318.000.
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Heikinheimo, Lennart O., 4,325,477, Cl. 198-461.000.
Plancher, Henry; and Petersen, Joseph C., to United States of America, Energy. Tertiary nitrogen heterocyclic material to reduce moisture-induced damage in asphalt-aggregate mixtures. 4,325,738, Cl. 106-273.00N.
Plaskacewicz, Edward: *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Plevak, Lubomir; and Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation. 4,325,659, Cl. 405-299.000.
Plevy, Arthur L. Universal gravity operated intrusion sensing device. 4,326,196, Cl. 340-545.000.
Poeselt, Horst: *See*—
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Poff, David A.: *See*—
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Poggio, Mario, to SAIAG S.p.A. Assembly consisting of a seal gasket for valve stems and a spring support cap. 4,325,558, Cl. 277-189.000.
Pohlmann, Hans-Juergen: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Polacsek, David D. Combination automobile sun visor and speaker assembly. 4,326,100, Cl. 179-1.0VE.
Polaroid Corporation: *See*—
Dietz, Milton S., 4,325,616, Cl. 354-27.000.
Grimes, Donald L., 4,325,614, Cl. 354-23.00D.
Pedroli, Walter E., 4,325,624, Cl. 354-304.000.
Polychrome Corporation: *See*—
Golda, Eugene; and Wilkes, Alan, 4,326,020, Cl. 430-302.000.
Jargiello, Paul, 4,326,018, Cl. 430-15.000.
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., to Texas Instruments Incorporated. Method of making CMOS device allowing three-level interconnects. 4,325,169, Cl. 29-571.000.
Poole, Robert E.: *See*—
Sixsmith, Herbert; and Poole, Robert E., 4,325,672, Cl. 415-53.00T.
Popplewell, James M.; and Dempsey, Martin H., to Olin Corporation. System for cleaning metal strip. 4,325,746, Cl. 134-10.000.
Porter, Clifford R.; and Kaesz, Herbert D., to Pentanyl Technologies, Inc. Method of liquefaction of carbonaceous materials. 4,325,802, Cl. 208-10.000.
Postlethwaite, Dennis, to Lever Brothers Company. Detergent bleach compositions. 4,325,828, Cl. 252-102.000.
Postman, William: *See*—
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., 4,325,322, Cl. 118-410.000.
Poubeau, Pierre: *See*—
Hubert, Bernard; and Poubeau, Pierre, 4,325,586, Cl. 308-10.000.
Povh, Dusan: *See*—
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Poyser, Robert H.; and Turner, David H., to Beecham Group Limited. Metoclopramide/paracetamol tablets. 4,325,971, Cl. 424-324.000.
PPG Industries, Inc.: *See*—
Jensen, Thomas H., 4,325,721, Cl. 65-1.000.
Jensen, Thomas H., 4,325,722, Cl. 65-12.000.
Kellar, John D.; and Pereman, Gordon F., 4,325,723, Cl. 65-104.000.
Wagner, William E., 4,325,988, Cl. 427-160.000.
Pressurized Products, Inc.: *See*—
Kelly, Quentin T., 4,325,498, Cl. 222-210.000.
Price, David L., II, to Eaton Corporation. Electronic temperature control. 4,325,225, Cl. 62-229.000.
Priesnitz, Uwe: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Prikhodko, Jury N.: *See*—
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Procter & Gamble Company, The: *See*—
Feeser, Larry R., 4,325,482, Cl. 206-625.000.
Proctor, George M.: *See*—
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., 4,325,207, Cl. 52-641.000.
Propylox: *See*—
Hildon, Anthony M., 4,325,888, Cl. 260-502.00R.
Proske, Gerhard; Van der Piepen, Rolf; and Bittner, Hans-Joachim, to Luwa AG. Co-current evaporator. 4,325,781, Cl. 159-13.00A.
Protection Services, Inc.: *See*—
Kreinberg, Earl R., 4,326,161, Cl. 323-299.000.
Pruehs, Leslie L., to General Electric Company. Screw anchoring device and method. 4,325,178, Cl. 29-458.000.
Pulsonics Corporation: *See*—
Mokris, Michael M., 4,325,495, Cl. 222-1.000.
Punja, Nazim, to Imperial Chemical Industries Limited. Fungicidal compounds, compositions and processes. 4,325,966, Cl. 424-285.000.
Putney, Zimri C.: *See*—
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
QIT-Fer et Titane du Quebec, Inc.: *See*—
Gueguin, Michel, 4,325,920, Cl. 423-82.000.
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, to Ciba-Geigy Corporation. Herbicidal compositions containing N-(3-trifluoromethyl-1,2,4-thiadiazolyl-5)-N'-methyl-N'-methoxy urea and α-[4-(3'-5'-dichloropyridyl-2'-oxy)-phenoxy]-propionic acid propargyl ester for control of weeds in wheat cultures. 4,325,728, Cl. 71-90.000.
Quality Audio Components, Inc.: *See*—
Toulan, Roy D., Jr.; and Rensky, Richard, 4,326,283, Cl. 369-55.000.
Queneau, Paul B.; Beckstead, Leo W.; and Huggins, Dale K., to AMAX Inc. Autoclave soda digestion of scheelite concentrates with feedback control. 4,325,919, Cl. 423-61.000.
R. P. Scherer Corporation: *See*—
Pace, Joseph A., 4,325,761, Cl. 156-69.000.
Rabitsch, Hermann: *See*—
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Rae, George, to Rexnord Inc. Slip friction roller drive. 4,325,474, Cl. 198-781.000.

Rafter, Patrick M.; and Hitchcock, James E., to Magnavox Consumer Electronics Co. Tuning system for a color television receiver having a varactor tuner. 4,326,296, Cl. 455-192.000.

Rainer, Georg, to Byk-Gulden Lomberg Chemische Fabrik GmbH. Pharmaceutical compositions comprising a pyrazole derivative and method of use. 4,325,962, Cl. 424-273.00P.

Raistrick, Ian D.: *See*—
Huggins, Robert A.; and Raistrick, Ian D., 4,325,611, Cl. 350-357.000.

Ralph McKay Limited: *See*—
Young, Hartley F., 4,325,511, Cl. 238-349.000.

Ramsay, William R.: *See*—
Spilker, James J., Jr.; and Ramsay, William R., 4,326,292, Cl. 455-27.000.

Ramsey, Wallace B.: *See*—
Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., 4,325,794, Cl. 204-159.230.

Rapid Engineering Inc.: *See*—
Dirkes, James V., 4,325,352, Cl. 126-110.00A.

Rapson, W. Howard: *See*—
Reeve, Douglas W.; and Rapson, W. Howard, 4,325,783, Cl. 162-88.000.

Raschke, Curt R., to Xerox Corporation. Method of reducing cross talk in ink jet arrays. 4,326,206, Cl. 346-140.00R.

Rasmussen, Jerald K., to Minnesota Mining and Manufacturing Company. Phase transfer free-radical polymerization. 4,326,049, Cl. 526-91.000.

Rasmussen, Neil: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.

Ratcliffe, Charles T.; Soled, Stuart L.; Signorelli, Anthony J.; and Mador, Irving L., to Allied Corporation. Conversion of mononitro aromatic compounds to amino compounds by hydrogen sulfide. 4,326,081, Cl. 564-416.000.

Raue, Roderich: *See*—
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, 4,326,066, Cl. 548-256.000.

RCA Corporation: *See*—
Elliott, Charles A., 4,326,284, Cl. 369-77.000.
Gubitose, Nicholas F., 4,325,419, Cl. 141-302.000.
Russell, John P.; and Carroll, Charles B., 4,325,489, Cl. 220-2.200.
Weisbrod, Sherman, 4,326,151, Cl. 315-410.000.

Reagan, William J.: *See*—
Brown, Stanley M.; Reagan, William J.; and Woltermann, Gerald M., 4,325,813, Cl. 208-120.000.

Reams, Donald J., to Micro Air Systems, Inc. Submersible motor chemical processing apparatus. 4,325,394, Cl. 134-141.000.

REB Manufacturing, Inc.: *See*—
Guthrie, Dale H., 4,325,576, Cl. 296-65.00R.

Reber, Jean-Francois: *See*—
Steiger, Rolf; and Reber, Jean-Francois, 4,326,021, Cl. 430-427.000.

Reed, Kenneth J.; and Lythgoe, Alan L., to Reed, Kenneth James. Dry release transfer. 4,326,005, Cl. 428-201.000.

Reed, Kenneth James: *See*—
Reed, Kenneth J.; and Lythgoe, Alan L., 4,326,005, Cl. 428-201.000.

Rees, Werner, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing machine ink doctor blade adjustment apparatus. 4,325,303, Cl. 101-365.000.

Reeve, Douglas W.; and Rapson, W. Howard, to Erco Industries Limited. Bleaching procedure using chlorine dioxide and chlorine solutions. 4,325,783, Cl. 162-88.000.

Regan, David M.; and Beverley, Kenneth I., to United States of America, Air Force. Method and apparatus for measuring hand-eye coordination while tracking a changing size image. 4,325,697, Cl. 434-258.000.

Regelsberger, Wolfgang: *See*—
Richter, Martin; and Regelsberger, Wolfgang, 4,325,436, Cl. 173-13.000.

Regitz, Gunter: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,325,963, Cl. 424-274.000.

Rehn, Larry A.: *See*—
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,326,199, Cl. 340-622.000.

Reichardt, Werner: *See*—
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.

Reilly, Douglas L.: *See*—
Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., 4,326,259, Cl. 364-715.000.

Reiners, Robert A., to CPC International Inc. Extraction of oil from high oil-bearing seed materials. 4,325,882, Cl. 260-412.400.

Reinmold, Heinz-Josef; and Audi, Josef, to Saint Gobain Industries. Tracing table for recording the program for an automatic machine, in particular for cutting glass. 4,325,188, Cl. 33-1.00M.

Reinmuth, Klaus: *See*—
Kriegesmann, Jochen; Lipp, Alfred; and Reinmuth, Klaus, 4,326,039, Cl. 501-90.000.

Reitz, Erhard: *See*—
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.

Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, to Bayer Aktiengesellschaft. Phenol-formaldehyde condensates, their preparation and their use as dispersing agents, liquefaction agents and tanning agents. 4,325,890, Cl. 260-512.00C.

Rek, Johannes H. M.; and Holemans, Pieter M. J., to Lever Brothers Company. Process for producing a margarine having a reduced tendency to spattering. 4,325,980, Cl. 426-604.000.

Rembaum, Alan, to California Institute of Technology. Protein specific fluorescent microspheres for labelling a protein. 4,326,008, Cl. 428-403.000.

Remer, Robert K., to Hull-Smith Chemicals, Inc. Bland whey product and process of preparation. 4,325,977, Cl. 426-534.000.

Remer, Robert K., to Hull-Smith Chemicals, Inc. Process for imparting blandness to cheese. 4,325,978, Cl. 426-534.000.

Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, to Ciba-Geigy Corporation. Herbicidal and plant growth regulating pyridyloxy-phenoxy-propionic acid derivatives. 4,325,729, Cl. 71-94.000.

Rensky, Richard: *See*—
Toulan, Roy D., Jr.; and Rensky, Richard, 4,326,283, Cl. 369-55.000.

Renz, Klaus: *See*—
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.

Research Association for Residual Oil Processing: *See*—
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.

Research Corporation of the University of Hawaii, The: *See*—
Cramer, Roger E., 4,325,950, Cl. 424-245.000.

Rexnord Inc.: *See*—
Delmer, Philip T., 4,325,298, Cl. 100-214.000.
Rae, George, 4,325,474, Cl. 198-781.000.

Reynolds Metals Company: *See*—
McLean, John R., 4,325,519, Cl. 242-75.410.

Rezvykh, Konstantin A.; and Romanv, Valentin A. Supporting insulating column of high voltage accelerator. 4,326,141, Cl. 310-308.000.

Rhodes, Bruce: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.

Rhone-Poulenc Industries: *See*—
Botton, Roger; and Cosserat, Dominique, 4,325,923, Cl. 423-234.000.

Riat, Henri: *See*—
Seitz, Karl; Riat, Henri; and Hoegerle, Karl, 4,325,869, Cl. 260-146.00D.

Richard, Gerard Y., to Societe d'Applications de Procedes Industriels et Chimiques. Transport belt intended for transporting products at a high temperature, and a transport means equipped with this belt. 4,325,478, Cl. 198-699.000.

Richard Wolf GmbH: *See*—
Boebel, Manfred, 4,325,377, Cl. 128-326.000.

Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., to Caterpillar Tractor Co. Air flow system for the charging conductor in an electrostatic painting system. 4,325,319, Cl. 118-634.000.

Richardson-Merrell Inc.: *See*—
Metcalf, Brian W.; and Adams, Jerry L., 4,325,877, Cl. 260-349.000.

Richardson-Vicks Inc.: *See*—
Shah, Nutan B., 4,325,939, Cl. 424-55.000.

Richter, Hans, to H. A. Schlatter AG. Method for measuring distances and apparatus for performing the method. 4,325,639, Cl. 356-376.000.

Richter, Martin; and Regelsberger, Wolfgang, to Hilti Aktiengesellschaft. Hammer drill or chipping hammer device. 4,325,436, Cl. 173-13.000.

Rico, Laureano P. Paint drip catcher. 4,325,159, Cl. 15-248.00A.

Ricoh Co., Ltd.: *See*—
Funato, Hiroyoshi, 4,325,601, Cl. 350-3.710.
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.

Ricoh Watch Co., Ltd.: *See*—
Inoue, Hiroshi, 4,325,610, Cl. 350-343.000.

Ridley, John: *See*—
Blade, John C.; Ridley, John; and Wood, Geoffrey C., 4,325,755, Cl. 148-32.000.

Riebel, Hans-Jochem: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.

Riegel Textile Corporation: *See*—
Teed, Richard K., 4,325,372, Cl. 128-287.000.

Rightmire, Robert A.: *See*—
Alford, Harvey E.; and Rightmire, Robert A., 4,325,810, Cl. 208-112.000.

Rinde, James A., to United States of America, Energy. Metal-doped organic foam. 4,325,737, Cl. 106-122.000.

Rioux, Jean P. Collapsible paint tray carrier and paint spatter protector. 4,325,323, Cl. 118-504.000.

Ristow, Dietrich, to Siemens Aktiengesellschaft. Method of making a MESFET having same type conductivity for source, drain, and gate regions. 4,325,747, Cl. 148-1.500.

Rittenbach, Otto E.; and Olesch, Reinhard G., to United States of America, Army. Electronic intruder detection system. 4,326,272, Cl. 367-93.000.

Ritter, Kenneth J.: *See*—
Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., 4,325,635, Cl. 356-349.000.

Rively, Clair M.: *See*—
Plagge, Vernon L.; and Rively, Clair M., 4,326,146, Cl. 313-318.000.
Roark, James T.; and Hayter, Steven R., to Otis Engineering Corporation. Manually operated blowout preventer and hydraulic operator therefor. 4,325,534, Cl. 251-1.00A.
Robert Bosch GmbH: *See*—
Eheim, Franz; and Hofer, Gerald, 4,325,337, Cl. 123-357.000.
Fehrenbach, Siegfried, 4,325,349, Cl. 123-587.000.
Klein, Ottokar, 4,326,128, Cl. 250-231.0SE.
Nonnenmacher, Gerhard, 4,325,677, Cl. 417-218.000.
Romann, Peter; and Hafner, Udo, 4,325,253, Cl. 73-204.000.
Schmidt, Wolfgang, 4,326,172, Cl. 330-294.000.
Roberts, Clifford J., Jr., to Scott Paper Company. Soft, absorbent, unitary, laminate-like fibrous web. 4,326,000, Cl. 428-153.000.
Roberts, Michael G.; and Tanner, Joseph F., to Owens-Corning Fiberglas Corporation. Solvent solutions of chemically modified asphalts. 4,325,854, Cl. 524-476.000.
Roberts, William M., to Baker International Corporation. Pilot valve for subsea test valve system for deep water. 4,325,409, Cl. 137-596.140.
Roberts, William M., to Baker International Corporation. Tubing shut off valve. 4,325,434, Cl. 166-321.000.
Robinson, Samuel C.: *See*—
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.
Rocheleau, Richard E.: *See*—
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Rock, Erich, to Julius Blum Gesellschaft m.b.H. Joining device for connecting two furniture parts. 4,325,649, Cl. 403-231.000.
Rodenheber, Rainer: *See*—
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Rodgers, John L., Jr., to Solid Controls, Inc. Electro-hydraulic ram control apparatus. 4,325,896, Cl. 264-40.100.
Roemer, Dietmar: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Rogers, Billie O.: *See*—
Miller, Thomas G.; and Rogers, Billie O., 4,325,252, Cl. 73-190.0EW.
Rohatgi, Naresh K.: *See*—
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.
Rohloff, Rolf, to Siemens Aktiengesellschaft. Electric motor having a hook-shaped commutator. 4,326,140, Cl. 310-234.000.
Rohm and Haas Company: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.
Rollei-Werke Franke & Heidecke GmbH & Co. KG: *See*—
Hartung, Hansjurgen, 4,325,622, Cl. 354-170.000.
Roller, Donald C.: *See*—
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Romann, Peter; and Hafner, Udo, to Robert Bosch GmbH. Apparatus for measuring the mass of a flowing medium. 4,325,253, Cl. 73-204.000.
Romano, Ugo; and Ioro, Giuseppe, to Anic, S.P.A. Process for preparing aromatic alkylamines. 4,326,079, Cl. 564-393.000.
Romanv, Valentin A.: *See*—
Rezvykh, Konstantin A.; and Romanv, Valentin A., 4,326,141, Cl. 310-308.000.
Rood, Allan J.: *See*—
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Rose, Philip M.: *See*—
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Rosemount Inc.: *See*—
Frick, Roger L., 4,325,399, Cl. 137-85.000.
Rosen, Irving: *See*—
Li, George S.; and Rosen, Irving, 4,326,045, Cl. 525-206.000.
Rosen, Meyer R.: *See*—
Braun, David B.; and Rosen, Meyer R., 4,325,861, Cl. 523-205.000.
Rosen, Murray; Koenig, Alan R.; and Copham, John D., to Celotex Corporation, The. Method for making a slurry containing particulate matter and fibers for a preformed insulation product. 4,325,849, Cl. 252-62.000.
Rosen, Perry: *See*—
Holland, George W.; Rosen, Perry; and Gallo-Torres, Hugo, 4,325,970, Cl. 424-311.000.
Rosenberg, Harvey S.; and Genco, Joseph M., to Industrial Resources, Inc. Air pollution control process and apparatus. 4,325,713, Cl. 55-73.000.
Rosenberg, Jean M. L. Process for the manufacture of rolled capacitors. 4,325,167, Cl. 29-25.420.
Rosendall, Henry J., to Bissell, Inc. Floor sweeper with improved construction. 4,325,156, Cl. 15-41.00R.
Rosenstatter, Otto; and Straihammer, Reinhard, to Siemens Aktiengesellschaft. Dental handpiece arrangement. 4,325,696, Cl. 433-133.000.
Rosenthal, Joel W.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with interstage guard bed. 4,325,800, Cl. 208-8.0LE.
Rosenthal Technik A.G.: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Roser, Erich, to Rudolf Hubner GmbH & Co. Compressed air motor. 4,325,285, Cl. 91-341.00R.
Rospatch Corporation: *See*—
Tasma, James D., 4,326,133, Cl. 307-26.000.
Rossetti, James J., to Beatrice Foods Co. Method for shaping and finishing a workpiece. 4,325,779, Cl. 156-651.000.
Rovnyak, George C., to E. R. Squibb & Sons, Inc. Bis-amidine ketones, compositions containing same and method of use. 4,325,958, Cl. 424-267.000.
Royer, Garfield P. Polymeric particulate carrier. 4,326,009, Cl. 428-407.000.
Ruckle, Duane L.: *See*—
Brown, Edgar E.; and Ruckle, Duane L., 4,325,756, Cl. 148-32.500.
Rudolf Hubner GmbH & Co.: *See*—
Roser, Erich, 4,325,285, Cl. 91-341.00R.
Rudolph, Paul: *See*—
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.
Rupp, Alexander: *See*—
Farber, Karl-Heinz; and Rupp, Alexander, 4,325,299, Cl. 100-295.000.
Russell, John P.; and Carroll, Charles B., to RCA Corporation. Envelope for flat panel display devices. 4,325,489, Cl. 220-2.200.
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., to Canadian Patents & Development Ltd. Arch forming assembly. 4,325,207, Cl. 52-641.000.
Russell, T. W. Fraser: *See*—
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Ruthner Industrieanlagen-Aktiengesellschaft: *See*—
Krepler, Albert, 4,325,935, Cl. 423-483.000.
Ruyak, Robert F., to Autoclave Engineers, Inc. Laboratory pressure vessel. 4,325,914, Cl. 422-102.000.
SAB Industri AB: *See*—
Helgesen, Herman, 4,326,158, Cl. 322-4.000.
Sachs, Peter R.; and Sears, James W., to GAF Corporation. Radiation cured coating and process therefor. 4,326,001, Cl. 428-161.000.
SAG Siegener AG: *See*—
Ackermann, Werner; and Vollhardt, Frohmut, 4,325,693, Cl. 432-195.000.
Saglio, Robert: *See*—
Pigeon, Michel; and Saglio, Robert, 4,326,166, Cl. 324-225.000.
Sahara, Masayoshi; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Camera exposure control device. 4,325,617, Cl. 354-31.000.
Sai-Halasz, George A.: *See*—
Fang, Frank F.; and Sai-Halasz, George A., 4,326,208, Cl. 357-16.000.
SAIAG S.p.A.: *See*—
Poggio, Mario, 4,325,558, Cl. 277-189.000.
Saint Gobain Industries: *See*—
Reinmold, Heinz-Josef; and Audi, Josef, 4,325,188, Cl. 33-1.00M.
Saito, Kiyotaka: *See*—
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,325,838, Cl. 252-429.00B.
Saito, Koichi; and Ohara, Osamu, to Kuraray Company, Limited. Aqueous dispersion type coating compositions with an improved vibration-damping characteristic. 4,325,858, Cl. 524-524.000.
Sakagami, Koji: *See*—
Okada, Eisaburo; and Sakagami, Koji, 4,325,736, Cl. 106-88.000.
Sakai, Masato: *See*—
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, 4,325,334, Cl. 123-270.000.
Sakamoto, Hitoshi, to Sony Corporation. Magnetic transducer supporting apparatus. 4,326,228, Cl. 360-109.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. System for recognizing a word sequence by dynamic programming and by the use of a state transition diagram. 4,326,101, Cl. 179-1.0SD.
Saleh, Mustafa Y. M., to Siemens Corporation. Current foldback circuit for a DC power supply. 4,326,245, Cl. 363-79.000.
Salim, Massoud A.; and Hamacher, Thomas L., to Tios Corporation. Modular solar building construction. 4,325,205, Cl. 52-79.100.
Salvatori, Tito: *See*—
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,325,885, Cl. 260-448.00R.
San-O Industrial Company, Ltd.: *See*—
Arikawa, Hiroo, 4,326,185, Cl. 337-201.000.
Sanders Associates, Inc.: *See*—
Dehney, George J.; and Spade, Gerald L., 4,326,175, Cl. 372-106.000.
Hayner, Paul, 4,325,412, Cl. 137-625.650.
Sandoz Ltd.: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.
Schuster, Johann, 4,325,862, Cl. 524-87.000.
Sankyo Electric Company Limited: *See*—
Miyazawa, Kiyoshi, 4,325,683, Cl. 418-55.000.
Sanyo Electric Co., Ltd.: *See*—
Shimoi, Mamoru, 4,326,286, Cl. 369-226.000.
Sarkar, Siddhartha, to University of California, The Regents of the. Method for fractionating cells. 4,326,026, Cl. 435-2.000.

Sasaki, Fujio: *See—*
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.
Sasaki, Kyoichi, to Nippon Electric Industry Co., Ltd. Offset pivot hinges with door closing devices. 4,325,164, Cl. 16-55.000.
Sasaki, Masao, to Oki Electric Industry Co., Ltd. Inkribbon cartridge. 4,325,646, Cl. 400-196.100.
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, to Ricoh Company, Ltd. Ortho-Bis (2-substituted azostyryl) benzene compounds. 4,325,871, Cl. 260-160.000.
Sasaki, Toshinobu: *See—*
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 83-205.000.
Sashida, Toshiiku. Supersonic vibration driven motor device. 4,325,264, Cl. 74-88.000.
Sassi, Alessandro P.: *See—*
Cooper, Michael G.; and Sassi, Alessandro P., 4,326,253, Cl. 364-435.000.
Sata, Toshio; and Matsushima, Katsumori, to Fujitsu Fanuc Ltd. Tool breakdown detecting system. 4,326,257, Cl. 364-508.000.
Sato, Eiichi: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Sato, Hiroshi; Okamoto, Takehiko; and Asada, Akira, to Toray Industries, Inc. Bulk polymerization reactor. 4,325,915, Cl. 422-135.000.
Sato, Reisuke; and Sugai, Yoshiro, to Pioneer Electronic Corporation. Noise suppressing device in FM receiver. 4,326,297, Cl. 455-213.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Correction label applying device for portable label printing machine. 4,325,774, Cl. 156-542.000.
Satoh, Toshikazu: *See—*
Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,232, Cl. 361-127.000.
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,233, Cl. 361-127.000.
Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., to United States of America, Army. Heterodyne indicial refractometer. 4,325,635, Cl. 356-349.000.
Sauber, Charles J. Reel brake clamping assembly. 4,325,522, Cl. 242-86.700.
Savin Corporation: *See—*
Swidler, Ronald; and Gardiner, Kenneth W., 4,325,627, Cl. 355-10.000.
Sawa, Kenneth B.; and Neti, Radhakrishna M., to Beckman Instruments, Inc. Carbon monoxide detection apparatus. 4,325,912, Cl. 422-95.000.
Sawada, Kazunori: *See—*
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Sawada, Yoshio: *See—*
Aoki, Harumi; and Sawada, Yoshio, 4,326,127, Cl. 250-204.000.
Schaefer, Rudolf. Hollow body assemblies. 4,325,414, Cl. 138-155.000.
Schaeffer, Bruce S., to Frick Company. Refrigeration system condenser heat recovery at higher temperature than normal condensing temperature. 4,325,226, Cl. 62-238.600.
Schaenzer, Mark. Unitized case resizer and trimmer. 4,325,282, Cl. 86-24.000.
Schafer, George. Pallet loading and unloading method. 4,325,669, Cl. 414-786.000.
Schaldach, Max: *See—*
Blaser, Reinhard; Olach, Klaus; and Schaldach, Max, 4,325,384, Cl. 128-696.000.
Scharm, Klaus: *See—*
Zerle, Ludwig; and Scharm, Klaus, 4,325,897, Cl. 264-40.300.
Schaupp, Kurt: *See—*
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.
Scheffer, Karl D. System and process for abatement of casting pollution, reclaiming resin bonded sand, and/or recovering a low BTU fuel from castings. 4,325,424, Cl. 164-5.000.
Scheinthal, Bernard M.; and Chafetz, Lester, to Warner-Lambert Company. Theophylline test. 4,325,908, Cl. 422-61.000.
Schellhammer, Carl-Wolfgang: *See—*
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, 4,326,066, Cl. 548-256.000.
Scherbing, Frank J., to Fort Lock Corporation. Cable lock. 4,325,238, Cl. 70-18.000.
Schierenbeck, Reinhard. Cast grate, especially for pig stables. 4,325,326, Cl. 119-28.000.
Schiffner, Gerhard, to Siemens Aktiengesellschaft. Interferometer with a single-mode waveguide coil. 4,325,636, Cl. 356-350.000.
Schingnitz, Manfred: *See—*
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., to Chevron Research Company. N-Haloacetylphenylamino carbonyl cyclic intermediates. 4,326,077, Cl. 564-211.000.
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, to Barmag Barmer Maschinenfabrik. Method and apparatus for winding textile yarns. 4,325,517, Cl. 242-18.100.
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, to Massachusetts Institute of Technology. Automatic switching matrix. 4,326,191, Cl. 340-825.790.
Schlegel (UK) Limited: *See—*
Holding, David; and Chancellor, John D., 4,325,900, Cl. 264-103.000.
Holding, David; and Chancellor, John D., 4,325,901, Cl. 264-146.000.
Holding, David, 4,325,902, Cl. 264-146.000.
Schleich, Helmut: *See—*
Ahner, Stefan; Srostlik, Peter; Schleich, Helmut; and Diem, Hans, 4,326,130, Cl. 250-506.000.
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, to Arbed S.A. Process for conditioning slag during the refining of a metal bath. 4,325,730, Cl. 75-52.000.
Schley, Ronald F.: *See—*
Connin, John L.; Hartman, G. William, Jr.; and Schley, Ronald F., 4,326,222, Cl. 358-292.000.
Schluter Electronic GmbH: *See—*
Schluter, Peter, 4,326,227, Cl. 360-99.000.
Schluter, Peter, to Schluter Electronic GmbH. Apparatus for recording and reading data from a magnetic plate. 4,326,227, Cl. 360-99.000.
Schmidt, Glenn H.: *See—*
Thompson, Stanley C.; and Schmidt, Glenn H., 4,325,550, Cl. 273-80.00C.
Schmidt, Klaus Dieter: *See—*
Fehr, Werner; and Schmidt, Klaus Dieter, 4,326,167, Cl. 324-415.000.
Schmidt, Otto K., to AMF Incorporated. Instantaneous slurry preparation on a continuous basis. 4,325,391, Cl. 131-372.000.
Schmidt, Peter: *See—*
Friedrich, Robert; and Schmidt, Peter, 4,325,613, Cl. 354-1.000.
Schmidt, Rudolf: *See—*
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.
Schmidt, Wolfgang, to Robert Bosch GmbH. Tunable active high-pass filter. 4,326,172, Cl. 330-294.000.
Schnarr, Marcus M.: *See—*
Fischbeck, Kenneth H.; and Schnarr, Marcus M., 4,326,205, Cl. 346-140.00R.
Schneider, Hermann: *See—*
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.
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Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.
Schopper, Bernd: *See—*
Weiler, Rolf; and Schopper, Bernd, 4,325,407, Cl. 137-493.200.
Schroder, John G. Wood preservation process. 4,325,993, Cl. 427-315.000.
Schroder, Rolf: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Schroeder Brothers Corporation: *See—*
Mitchell, Samuel S.; and Vijlee, Abbas F., 4,325,824, Cl. 210-90.000.
Schuch, Gerhard: *See—*
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Schulz, Galyn A., to American Can Company. Method of manufacturing fibrous sheet structure. 4,325,768, Cl. 156-206.000.
Schulz, Galyn A., to American Can Company. Apparatus for manufacturing fibrous sheet structure. 4,325,773, Cl. 156-471.000.
Schulz, Galyn A., to American Can Company. Multi-ply fibrous sheet structure and its manufacture. 4,326,002, Cl. 428-178.000.
Schulz, Robert M., Sr. Method of making a printed circuit board. 4,325,780, Cl. 156-659.100.
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., to Texaco Development Corporation. Process and product. 4,326,050, Cl. 528-94.000.
Schumacher, Kurt: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Schurter, Rolf: *See—*
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, 4,325,729, Cl. 71-94.000.
Schuster, David A., to General Motors Corporation. Piston position control mechanism. 4,325,471, Cl. 192-85.0AA.
Schuster, Johann, to Sandoz Ltd. Solid pigment compositions containing C_4-C_6 methacrylate-amino acrylate copolymers. 4,325,862, Cl. 524-87.000.
Schutte, Heinz, to Hoechst Aktiengesellschaft. Separator. 4,325,825, Cl. 210-371.000.
Schuurman, Pieter J., to Shell Oil Company. Heat exchanger. 4,325,428, Cl. 165-72.000.
Schweigel, Hans-Joachim: *See—*
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Scientific Drilling Controls: *See—*
Zuvela, Bernard R., 4,325,438, Cl. 175-50.000.
Scott, John W., to Chevron Research Company. Three-stage catalyst regeneration. 4,325,833, Cl. 252-417.000.

Scott Paper Company: *See*—
Roberts, Clifford J., Jr., 4,326,000, Cl. 428-153.000.
Urion, Kenard E.; and Cleminshaw, Douglas R., 4,325,176, Cl. 29-450.000.
Scott, Waller M., Jr., to Scovill Inc. Musical door chime preferably also combined with a clock for annunciating the time. 4,326,276, Cl. 368-10.000.
Scott, William H.; and Wagdy, Mohamed K., to Sunbeam Corporation. Food-mixing apparatus comprising a driving unit and a separable arm. 4,325,643, Cl. 366-200.000.
Scovill Inc.: *See*—
Scott, Waller M., Jr., 4,326,276, Cl. 368-10.000.
Scowen, Reginald V.: *See*—
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Seabrook Blanching Corporation: *See*—
Weyant, Lowell E., 4,325,297, Cl. 99-625.000.
Seales, David: *See*—
Gillette, Donald J.; Hajek, Bedrich; and Seales, David, 4,325,982, Cl. 427-32.000.
Sears, James W.: *See*—
Sachs, Peter R.; and Sears, James W., 4,326,001, Cl. 428-161.000.
Seckendorf, Bernard A.; and Kalbfeld, Jack W., to Wrist-A-Matic, Ltd. Camera. 4,325,619, Cl. 354-121.000.
Seebinger, Frederick L., to American Trading and Production Corp. Mounting bracket assembly. 4,325,529, Cl. 248-298.000.
Seigert, Peter, to Jean Walterscheid GmbH. Protective device for universal joints. 4,325,587, Cl. 308-36.100.
Seitz, Hans; and Huinink, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic tires, especially belted tires. 4,325,423, Cl. 152-361.00R.
Seitz, Karl; Riat, Henri; and Hoegerle, Karl, to Ciba-Geigy Corporation. Novel dyes, their preparation and use. 4,325,869, Cl. 260-146.00D.
Seki, Junichi: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Seki, Masahiko; and Io, Yukito, to Nippon Steel Corporation. Apparatus for supplying fluids to a converter. 4,325,540, Cl. 266-243.000.
Seki, Yashiro; and Kobayashi, Hideo, to Anritsu Electric Company Limited; and Systematix Co. Ltd. Multi-item data input apparatus. 4,326,195, Cl. 340-365.00R.
Sekimura, Nobuyuki: *See*—
Kamiya, Osamu; and Sekimura, Nobuyuki, 4,325,608, Cl. 350-165.000.
Selover, Theodore B., Jr.; and Hacha, Thomas H., to Standard Oil Company, The. Swaged seal for fused salt batteries. 4,326,016, Cl. 429-184.000.
Semenjuk, Georgy A.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
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Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.
Sethofer, Nicholas L., to Timex Corporation. Three ring dioxane liquid crystalline compounds. 4,325,830, Cl. 252-299.610.
SGB Group Limited: *See*—
Blank, Wilhelm W. A. O., 4,325,532, Cl. 249-26.000.
Shaffer, John W.; and Broadt, David R., to GTE Products Corporation. Multilamp photoflash unit having engageable connector tab. 4,326,240, Cl. 362-11.000.
Shaffer, John W.: *See*—
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.
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Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., 4,325,771, Cl. 156-261.000.
Shah, Nutan B., to Richardson-Vicks Inc. Zinc derivatives and their use in dental compositions. 4,325,939, Cl. 424-55.000.
Shanks, Ian A., to National Research Development Corporation. Analogue displays. 4,326,279, Cl. 368-240.000.
Sharp Kabushiki Kaisha: *See*—
Aso, Akira; and Kawanabe, Hitoshi, 4,326,210, Cl. 357-22.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,325,441, Cl. 177-25.000.
Toyoda, Munemitsu; and Adachi, Koichiro, 4,326,113, Cl. 219-10.55D.
Shaw, Lyle W.: *See*—
Borland, David L.; and Shaw, Lyle W., 4,326,190, Cl. 340-146.3AE.
Shaw, Mark L.; and Freimark, Ronald J., to Motorola, Inc. Temperature compensating pressure sensor amplifier circuits. 4,326,171, Cl. 330-256.000.
Shay, Joseph J., to Ethyl Products Company. Extended spray pump. 4,325,499, Cl. 222-321.000.
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Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., 4,325,579, Cl. 299-5.000.
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Maas, Rudolf J.; and Visser, Rene M., 4,326,091, Cl. 585-828.000.
Schuurman, Pieter J., 4,325,428, Cl. 165-72.000.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,842, Cl. 252-443.000.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,843, Cl. 252-443.000.
Shepherd, Robin G., to John Wyeth and Brother Limited. 4-Aryl-4-aryloxypiperidines. 4,325,953, Cl. 424-250.000.
Sheppard, Peter H. Power steering gear with initial lockable spring adjusting nuts. 4,325,288, Cl. 91-422.000.
Sherex Chemical Company, Inc.: *See*—
Escalera, Saul J., 4,325,821, Cl. 209-166.000.
Sherrick, James W., to Lord Corporation. Adjustable spring clip. 4,325,510, Cl. 238-341.000.
Sherwood, William L. Rolling mill stand. 4,325,245, Cl. 72-248.000.
Shibata, George K.: *See*—
Campman, Arthur R.; Shibata, George K.; and Cumming, William D., 4,325,999, Cl. 428-112.000.
Shibata, Hirotaka, to Yamaha, Hatsudoki, Kabushiki, Kaisha. Two stroke engine having exhaust timing control valve means. 4,325,335, Cl. 123-323.000.
Shibata, Kozo. Adsorbent materials for oils and fats. 4,325,846, Cl. 252-455.00R.
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,326,278, Cl. 368-157.000.
Shigemura, Takashi: *See*—
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, 4,325,995, Cl. 427-428.000.
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Shikano, Hiroshi: *See*—
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Shimano Industrial Company Limited: *See*—
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Kojima, Masao, 4,325,267, Cl. 74-489.000.
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Shimizu, Akira: *See*—
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Shimizu, Kazuaki: *See*—
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Shimoi, Mamoru, to Sanyo Electric Co., Ltd. Automatic recorder player. 4,326,286, Cl. 369-226.000.
Shinoda, Yoshio: *See*—
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Shiono, Hidemi: *See*—
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Shirai, Kazunari; and Tanaka, Izumi, to Fujitsu Limited. Semiconductor device and process for producing the same. 4,326,213, Cl. 357-51.000.
Short, James N.: *See*—
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., 4,325,837, Cl. 252-429.00B.
Shtrikman, Shmuel, to Yeda Research & Development Co., Ltd. Hair cutting apparatus. 4,326,138, Cl. 310-36.000.
Shuey, Kenneth C., to Westinghouse Electric Corp. Electrically held power relay circuit with reduced power dissipation. 4,326,234, Cl. 361-154.000.
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Appelt, Guenter, 4,326,144, Cl. 313-60.000.
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Braun, Rudiger, 4,326,160, Cl. 323-241.000.
Fettweis, Alfred, 4,326,288, Cl. 370-70.000.
Fromm, Ingrid; and Lagger, Helmut, 4,326,298, Cl. 455-606.000.
Krug, Adolf, 4,325,524, Cl. 246-34.00R.
Mattuschka, Werner, 4,326,142, Cl. 310-320.000.
Menzel, Gunter, 4,325,776, Cl. 156-610.000.
Ristow, Dietrich, 4,325,747, Cl. 148-1.500.
Rohloff, Rolf, 4,326,140, Cl. 310-234.000.
Rosenstatter, Otto; and Straihammer, Reinhard, 4,325,696, Cl. 433-133.000.
Schiffner, Gerhard, 4,325,636, Cl. 356-350.000.
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Winzer, Gerhard; and Auracher, Franz, 4,325,605, Cl. 350-96.150.
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Siemens Corporation: *See*—
Levy, Allan, 4,326,170, Cl. 330-10.000.
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Signorelli, Anthony J.: *See*—
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Silenietse, Gunta O.: *See—*
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Silver Street, Incorporated: *See—*
Hardy, Bruce N., 4,325,280, Cl. 84-411.00M.
Hardy, Bruce N., 4,325,281, Cl. 84-411.00M.

Silvestri, George J., Jr., to Westinghouse Electric Corp. Method for admitting steam into a steam turbine. 4,325,670, Cl. 415-1.000.

Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco. Method of treating abstinence syndrome with cycloaklyltriazoles. 4,325,952, Cl. 424-250.000.

Simacek, Josef: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.

Simko, Richard T.: *See—*
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Simonsen & Weel's EFTF. A/S: *See—*
Holte, Bo, 4,325,385, Cl. 128-712.000.

Simplimatic Engineering Company: *See—*
Butt, William C., 4,325,480, Cl. 198-841.000.

Singer Company, The: *See—*
Brauch, Robert B.; and Heine, Martin W., 4,325,316, Cl. 112-292.000.
Pepe, Russell J., 4,326,194, Cl. 340-365.00R.
Totino, Peter J.; and Voza, Alfonse N., 4,325,315, Cl. 112-266.100.

Siorek, Richard W., to United States of America, Army. Suspension control valve using coned spring disks. 4,325,468, Cl. 188-282.000.

Sixsmith, Herbert; and Poole, Robert E., to Utile Engineering Company Limited, The. Regenerative turbo machine. 4,325,672, Cl. 415-53.00T.

Skinner, Mitchell A.: *See—*
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Slaugh, Lynn H.; and Hoxmeier, Ronald J., to Shell Oil Company. Process for preparing a supported molybdenum carbide composition. 4,325,842, Cl. 252-443.000.

Slaugh, Lynn H.; and Hoxmeier, Ronald J., to Shell Oil Company. Process for preparing a supported tungsten carbide composition. 4,325,843, Cl. 252-443.000.

Sleder, Richard L.: *See—*
Bauer, Michael E.; and Sleder, Richard L., 4,325,350, Cl. 123-605.000.

Slivenko, Victor; and Bokros, Jack C., to Carbo Mediec Inc. Apparatus for forming an osteotomy for a dental implant. 4,325,373, Cl. 128-303.00R.

Sloboda, Adolph E., to American Cyanamid Company. Combinations of agents which give enhanced anti-inflammatory activity. 4,325,949, Cl. 424-230.000.

Smead, Robert G.: *See—*
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.

Smeets, Eugenius T. J. M., to U.S. Philips Corporation. N+PP−PP−P+ Avalanche photodiode. 4,326,211, Cl. 357-30.000.

Smith, Derek R.; and Worgan, Gordon P., to Union Carbide Corporation. Composite drive shafts. 4,325,174, Cl. 29-434.000.

Smith, Donald W.: *See—*
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., 4,325,580, Cl. 299-39.000.

Smith, Gary L.: *See—*
Smith, Robert L.; and Smith, Gary L., 4,325,513, Cl. 239-112.000.

Smith International, Inc.: *See—*
Vezirian, Edward, 4,325,439, Cl. 175-329.000.

Smith, Jack J. Laser beam welding apparatus. 4,326,118, Cl. 219-121.0LC.

Smith, James G.; and Bubbar, Gurbachan L., to University of Waterloo. Destruction of PCB's. 4,326,090, Cl. 585-469.000.

Smith, Robert L.; and Smith, Gary L. Gun for dispensing a plural component system. 4,325,513, Cl. 239-112.000.

Smith, Roger W., to White Consolidated Industries, Inc. Oil pump for hermetic compressor. 4,325,679, Cl. 417-372.000.

Snyder, Wesley L. Distillation apparatus with solar tracker. 4,325,788, Cl. 202-234.000.

Societa' Castoldi S.p.A.: *See—*
Castoldi, Luigi, 4,325,699, Cl. 440-47.000.

Societa Italiana Vetro-Siv-S.p.A.: *See—*
Kalbskopf, Reinhard; and Baumberger, Otto, 4,325,987, Cl. 427-110.000.

Societe Anonyme Francaise du Ferodo: *See—*
Dauvergne, Jean L. R., 4,325,447, Cl. 180-132.000.

Societe d'Applications de Procedes Industriels et Chimiques: *See—*
Richard, Gerard Y., 4,325,478, Cl. 198-699.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Hicter, Jean-Marie; and Guerit, Pierre, 4,325,539, Cl. 266-207.000.

Societe Europeenne de Propulsion: *See—*
Vallet, Andre M., 4,325,930, Cl. 423-345.000.

Societe Logilift S.A.R.L.: *See—*
Evin, Jean, 4,326,197, Cl. 340-561.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, 4,325,675, Cl. 416-223.00R.
Hubert, Bernard; and Poubeau, Pierre, 4,325,586, Cl. 308-10.000.

Solartron Electronic Group Limited, The: *See—*
Ormiston, Peter T., 4,325,304, Cl. 102-200.000.

Soldatenko, Vladimir I.: *See—*
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.

Soled, Stuart L.: *See—*
Ratcliffe, Charles T.; Soled, Stuart L.; Signorelli, Anthony J.; and Mador, Irving L., 4,326,081, Cl. 564-416.000.

Solid Controls, Inc.: *See—*
Rodgers, John L., Jr., 4,325,896, Cl. 264-40.100.

Solomon, Jack, to Oxford Pendaflex Corp. Card file. 4,325,595, Cl. 312-183.000.

Son, Pyong-Nae; and Layer, Robert W., to B. F. Goodrich Company, The. Substituted decahydroquinolines. 4,326,061, Cl. 546-164.000.

Son, Pyong-Nae, to B. F. Goodrich Company, The. High molecular weight piperidine derivatives as UV stabilizers. 4,326,063, Cl. 546-191.000.

Sone, Yoshiaki: *See—*
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.

Sony Corporation: *See—*
Mogi, Takao, 4,326,220, Cl. 358-191.100.
Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, 4,326,239, Cl. 361-410.000.
Sakamoto, Hitoshi, 4,326,228, Cl. 360-109.000.
Yamagiwa, Kazuo; and Machida, Yukihiko, 4,326,223, Cl. 360-33.000.

Sorrentino, Ciro D., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,325,811, Cl. 208-113.000.

South African Inventions Development Corporation: *See—*
Hunn, Reginald A., 4,326,094, Cl. 174-23.00R.

Sowinski, Francis A.: *See—*
Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., 4,326,076, Cl. 564-156.000.

Spade, Gerald L.: *See—*
Dehney, George J.; and Spade, Gerald L., 4,326,175, Cl. 372-106.000.

Spalding, Michael H., to Paper Converting Machine Company. Method and apparatus for stacking. 4,325,475, Cl. 198-429.000.

Spector, George: *See—*
Driscoll, Mark; and Spector, George, 4,325,230, Cl. 62-293.000.
Pina, Octavio U.; and Spector, George, 4,325,485, Cl. 211-66.000.

Spence, Kemet D.; and Andrews, Robert E., to Battelle Development Corporation. Microbial insecticide. 4,325,937, Cl. 424-16.000.

Sperry Corporation: *See—*
Matthews, Hugh B., 4,325,681, Cl. 417-379.000.

Sperry Rand Corporation: *See—*
Marsh, Phillip W.; and Wiedenman, Gregory B., 4,326,291, Cl. 371-68.000.

Spilker, James J., Jr.; and Ramsay, William R., to Lockheed Missiles & Space Company, Inc. Random energy communication system. 4,326,292, Cl. 455-27.000.

Sprafke, Uwe: *See—*
Grunewald, Peter; and Sprafke, Uwe, 4,325,284, Cl. 89-37.00E.

Sprague Electric Company: *See—*
Markarian, Paul M.; and Howe, David C., 4,326,237, Cl. 361-329.000.

Square D Company: *See—*
Tharp, James A., 4,326,183, Cl. 337-70.000.

Squirrell, Anton F., to Grovag Grossventiltechnik A.G. Seals for gas isolators. 4,325,411, Cl. 137-601.000.

Srostlik, Peter: *See—*
Ahner, Stefan; Srostlik, Peter; Schleich, Helmut; and Diem, Hans, 4,326,130, Cl. 250-506.000.

SSAB Svenskt Stal Aktiebolag: *See—*
Josefsson, Erik A. A., 4,325,751, Cl. 148-12.00F.

Staebler, Paul J.: *See—*
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.

Stafford, Franklin H.: *See—*
Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R., 4,325,571, Cl. 285-177.000.

Stamicarbon B.V.: *See—*
De Cooker, Mario G. R. T., 4,326,085, Cl. 568-366.000.
Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,325,872, Cl. 260-326.5FN.

Stamires, Dennis M.: *See—*
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., 4,325,847, Cl. 252-455.00Z.

Stan Thompson Golf Club Company: *See—*
Thompson, Stanley C.; and Schmidt, Glenn H., 4,325,550, Cl. 273-80.00C.

Standard Oil Company, The: *See—*
Alford, Harvey E.; and Rightmire, Robert A., 4,325,810, Cl. 208-112.000.
Li, George S.; and Rosen, Irving, 4,326,045, Cl. 525-206.000.
Selover, Theodore B., Jr.; and Hacha, Thomas H., 4,326,016, Cl. 429-184.000.

Standard Oil Company (Indiana): *See—*
Kim, Dae K.; and Bertolacini, Ralph J., 4,325,808, Cl. 208-65.000.
Sorrentino, Ciro D., 4,325,811, Cl. 208-113.000.
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.

Stanford University: *See—*
Huggins, Robert A.; and Raistrick, Ian D., 4,325,611, Cl. 350-357.000.

Stang, John H.; and Yamaguchi, Hiromasa, to Cummins Engine Company, Inc.; and Komatsu Ltd. Two loop engine coolant system. 4,325,219, Cl. 60-599.000.
Staodynamics, Inc.: *See*—
Svacina, Lawrence M.; and James, Donald N., 4,325,254, Cl. 73-356.000.
Stauffer Chemical Company: *See*—
Epstein, Ronald A.; and Mink, Robert I., 4,325,836, Cl. 252-429.00B.
Steeg, Klaus; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Flywheel connected to an internal-combustion engine. 4,325,472, Cl. 192-48.100.
Steffan, Guido: *See*—
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Steger, David J.: *See*—
Winter, Robert A.; and Steger, David J., 4,325,537, Cl. 254-405.000.
Stegmaier, Alys J.: *See*—
Docherty, William G.; and Stegmaier, Alys J., 4,325,457, Cl. 181-210.000.
Steiger, Rolf; and Reber, Jean-Francois, to Ciba Geigy AG. Photographic negative material with at least one layer containing a desensitized silver halide emulsion. 4,326,021, Cl. 430-427.000.
Steinberger, Helmut: *See*—
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.
Stephan, Gerard, to Nadella. Combined thrust and radial bearing and the assembly of such a bearing with a support structure. 4,325,566, Cl. 280-668.000.
Stephen, Donald W.: *See*—
Klotz, Robert J.; and Stephen, Donald W., 4,325,785, Cl. 376-154.000.
Stephens, Geoffrey B.: *See*—
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
Sterling, Larry L.: *See*—
Bevan, William G.; and Sterling, Larry L., 4,325,429, Cl. 165-80.00E.
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, to Standard Oil Company (Indiana). Method for emergency shutdown of gas phase polyolefin reactor. 4,326,048, Cl. 526-68.000.
Stockinger, Friedrich; Eldin, Sameer H.; and Lohse, Friedrich, to Ciba-Geigy Corporation. N-Substituted aspartic acid monoesters. 4,326,069, Cl. 560-169.000.
Stor, Bob P.: *See*—
Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., 4,325,579, Cl. 299-5.000.
Storage Technology Corporation: *See*—
Touchton, James J.; and Pederson, Richard J., 4,326,226, Cl. 360-77.000.
Stowe, Robert L.; and Taylor, Wilbur B. Self-repairing wiper die. 4,325,244, Cl. 72-158.000.
Straihammer, Reinhard: *See*—
Rosenstatter, Otto; and Straihammer, Reinhard, 4,325,696, Cl. 433-133.000.
Strasser, Hans: *See*—
Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, 4,325,262, Cl. 73-861.280.
Strumskis, Louis, to Georgia Oil and Gas Company. Apparatus for retorting comminuted oil shale. 4,325,787, Cl. 202-106.000.
Students, Peter A., to Chemetron Corporation. Shaper nozzle for a carbon dioxide snow cyclone separator. 4,325,720, Cl. 62-35.000.
Studiengesellschaft Kohle m.b.H.: *See*—
Kisch, Horst, 4,325,793, Cl. 204-157.10R.
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Programmable sequence controller. 4,326,207, Cl. 364-900.000.
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, to Nippon Kokan Kabushiki Kaisha; and Nippon Mining Co., Ltd. Method for making shadow masks. 4,325,752, Cl. 148-12.100.
Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, to Osaka Gas Kabushiki Kaisha. Method of internally lining an installed pipe. 4,325,772, Cl. 156-294.000.
Sugai, Yoshiro: *See*—
Sato, Reisuke; and Sugai, Yoshiro, 4,326,297, Cl. 455-213.000.
Sugano, Kazuhiko: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,325,271, Cl. 74-869.000.
Sugita, Hiroshi: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Sugita, Kazuhiko, to Toyoda Koki Kabushiki Kaisha. Fluid bearing. 4,325,585, Cl. 308-9.000.
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, to Toppan Printing Co., Ltd. Method of preventing color accurate reproductions using color photocopiers and the like. 4,325,981, Cl. 427-7.000.
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, to Bayer Aktiengesellschaft. Acrylonitrile polymerization with organic solvent. 4,326,051, Cl. 528-386.000.
Sulzer Brothers Limited: *See*—
Hintsch, Otto, 4,325,520, Cl. 242-47.010.
Miszak, Pawel, 4,325,328, Cl. 122-6.00A.
Sumitomo Chemical Company, Ltd.: *See*—
Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.
Okabe, Takayuki; Hirano, Masachika; and Mukai, Kunio, 4,326,058, Cl. 544-243.000.
Sumitomo Electric Industries, Ltd.: *See*—
Mori, Yoshikatsu, 4,325,664, Cl. 409-234.000.
Sumitomo Metal Industries, Ltd.: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Sunbeam Corporation: *See*—
Contri, Robert F., 4,326,153, Cl. 318-327.000.
Scott, William H.; and Wagdy, Mohamed K., 4,325,643, Cl. 366-200.000.
Sundelin, Bo; Wahlin, Bengt R. A.; and Johansson, B. Gooran. Dental saliva ejector. 4,325,695, Cl. 433-91.000.
Supra Products, Inc.: *See*—
Larson, Wayne F., 4,325,239, Cl. 70-139.000.
Suzuka, Teruo: *See*—
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.
Suzuki, Hiromichi; and Okikawa, Susumu, to Hitachi, Ltd. Encapsulated semiconductor device with a metallic base plate. 4,326,215, Cl. 357-81.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Emergency locking device. 4,325,569, Cl. 280-804.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Yokoyama, Hiroshi, 4,325,346, Cl. 123-568.000.
Suzuki, Koji; and Tano, Eiichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter speed display device. 4,325,623, Cl. 354-289.000.
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, to Hitachi, Ltd. Magnetic bubble memory device. 4,326,268, Cl. 365-15.000.
Suzuki, Yoshiro: *See*—
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Svacina, Lawrence M.; and James, Donald N., to Staodynamics, Inc. Temperature indicative hotpack. 4,325,254, Cl. 73-356.000.
Sweeney, Dean, Jr.: *See*—
Ward, James E., 4,325,450, Cl. 180-247.000.
Swentzel, Kipling C. File for a chain saw. 4,325,168, Cl. 29-78.000.
Swiatosz, Edmund, to United States of America, Navy. Portable battery operated electric smoke generator. 4,326,119, Cl. 219-272.000.
Swidler, Ronald; and Gardiner, Kenneth W., to Savin Corporation. Method and apparatus for liquid-developing latent electrostatic images. 4,325,627, Cl. 355-10.000.
Swindall, William S.; and Mahyera, Anil, to Joy Manufacturing Company. Anvil with trapped fluid. 4,325,437, Cl. 173-131.000.
Swindells, Richard; and Fredette, Maurice C. J., to Erco Industries Limited. Production of chlorine dioxide with conversion of by-product solid phase sodium acid sulphate to its neutral form. 4,325,934, Cl. 423-478.000.
Swinney, Glen E. Painter's belt-on brush and bucket holder and carrier. 4,325,503, Cl. 224-148.000.
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., to CMI Corporation. Roadway planing apparatus. 4,325,580, Cl. 299-39.000.
Swiss Aluminium Ltd.: *See*—
Baur, Rudolf, 4,325,753, Cl. 148-20.300.
Systematix Co. Ltd.: *See*—
Seki, Yashiro; and Kobayashi, Hideo, 4,326,195, Cl. 340-365.00R.
Szabo, Sandor: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Szedon, John R., to Westinghouse Electric Corp. Corona charging for testing reliability of insulator-covered semiconductor devices. 4,326,165, Cl. 324-158.00R.
Szegi, Alexander. Protected traffic controller spikes. 4,325,651, Cl. 404-6.000.
Tabata, Mitsuo: *See*—
Kidode, Masatsugu; Asada, Haruo; and Tabata, Mitsuo, 4,326,202, Cl. 340-799.000.
Tabor, Carl J. Valve and method for use with a tracheotomy tube. 4,325,366, Cl. 128-207.160.
Tacoma Products, Inc.: *See*—
Darling, Stephen D.; Jendrisak, Aloysius A.; and Bokmiller, David J., 4,325,698, Cl. 434-278.000.
Tada, Satomi: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Tadiran Israel Electronics Industries Ltd.: *See*—
Bergida, Ephraim, 4,326,104, Cl. 179-16.0AA.
Takagi, Akinobu: *See*—
Abe, Yoshiharu; Gotoh, Osamu; and Takagi, Akinobu, 4,325,348, Cl. 123-571.000.
Takahashi, Keiichi, to Tokan Kogyo Co., Ltd. Method for producing a double-walled paper container. 4,325,905, Cl. 264-516.000.

Takahashi, Ken: *See*—
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
Takahashi, Kozi: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, to Hitachi, Ltd. Pressure transducer. 4,325,260, Cl. 73-726.000.
Takahashi, Norio: *See*—
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, 4,325,994, Cl. 427-376.800.
Takahashi, Susumu: *See*—
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
Takahashi, Toshio: *See*—
Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, 4,326,239, Cl. 361-410.000.
Takahira, Hideo: *See*—
Taki, Kazuo; and Takahira, Hideo, 4,325,942, Cl. 424-94.000.
Takaki, Masaoki: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Takao, Shuichiro: *See*—
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, to Fujikura Cable Works, Limited, The. Method for manufacturing a stranded conductor for an electric power cable. 4,325,750, Cl. 148-6.14R.
Takayama, Shuichi: *See*—
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.
Takayama, Yoshihiro: *See*—
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Electro-optical distance measuring apparatus. 4,325,638, Cl. 356-375.000.
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, to Fujitsu Limited. Electronic circuit packages. 4,326,238, Cl. 361-386.000.
Takeshita, Masatoshi: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takeuchi, Teruaki: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takeyama, Muneyoshi: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Taki, Kazuo; and Takahira, Hideo, to Eisai Co., Ltd. Ubidecarenone compositions having enhanced absorption properties. 4,325,942, Cl. 424-94.000.
Takita, Tomohisa: *See*—
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Tamada, Kazukiyo: *See*—
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.
Tamaki, Hiroshi: *See*—
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, to Hitachi, Ltd. Method and an apparatus for thin film formation. 4,325,995, Cl. 427-428.000.
Tanabe, Kenjiro: *See*—
Kimura, Yoshikazu; and Tanabe, Kenjiro, 4,325,630, Cl. 355-74.000.
Tanahashi, Toshio: *See*—
Kato, Takashi; and Tanahashi, Toshio, 4,325,333, Cl. 123-260.000.
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, to Denki Kagaku Kogyo Kabushiki Kaisha. Catalysts for polymerization of olefins. 4,325,838, Cl. 252-429.00B.
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, to NGK Spark Plug Co., Ltd. Sintered ceramics for cutting tools and manufacturing process thereof. 4,325,710, Cl. 51-309.000.
Tanaka, Izumi: *See*—
Shirai, Kazunari; and Tanaka, Izumi, 4,326,213, Cl. 357-51.000.
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven having a tubular L-shaped antenna. 4,326,112, Cl. 219-10.55F.
Tanaka, Mitsugu: *See*—
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, 4,326,024, Cl. 430-557.000.
Tanaka, Ryuzo; and Ishigaki, Hisao, to Citizen Watch Co., Ltd. Mounting structure of plastic glass in watch case. 4,326,281, Cl. 368-294.000.
Taniguchi, Nobuyuki: *See*—
Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,325,617, Cl. 354-31.000.
Tanner, Joseph F.: *See*—
Roberts, Michael G.; and Tanner, Joseph F., 4,325,854, Cl. 524-476.000.
Tannoy Products Limited: *See*—
Kirkpatrick, Maurice, 4,325,455, Cl. 181-148.000.
Tano, Eiichi: *See*—
Suzuki, Koji; and Tano, Eiichi, 4,325,623, Cl. 354-289.000.
Tapper, Robert. Iontophoretic treatment apparatus. 4,325,367, Cl. 128-207.210.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., to Texas Instruments Incorporated. Autoreferencing liquid level sensing apparatus and method. 4,326,199, Cl. 340-622.000.
Tarpley, William B., Jr.: *See*—
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.
Taschler, Felix. Igniter for portable gas appliances. 4,325,356, Cl. 126-413.000.
Tasma, James D., to Rospatch Corporation. Control circuit for alternately actuating a pair of loads. 4,326,133, Cl. 307-26.000.
Tatsumi, Hideo: *See*—
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.
Taurus Gumiipari Vallalat: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Tayama, Katsuhiko: *See*—
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Taylor, Dale W. W. Low angular acceleration putter and method. 4,325,553, Cl. 273-167.00F.
Taylor, Frank E. Sawhorse. 4,325,463, Cl. 182-155.000.
Taylor, Thomas G. Method and apparatus for producing alcohol and an alcohol-petroleum fuel mix. 4,325,329, Cl. 123-3.000.
Taylor, Wilbur B.: *See*—
Stowe, Robert L.; and Taylor, Wilbur B., 4,325,244, Cl. 72-158.000.
Tchon, Wallace E.: *See*—
Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,326,134, Cl. 307-268.000.
Teasdale, Raymond G., to National Reseach Development Corporation. Oil containment booms. 4,325,653, Cl. 405-68.000.
Technicraft, Inc.: *See*—
Jordan, Michael, 4,325,910, Cl. 422-64.000.
Teed, Richard K., to Riegel Textile Corporation. Elastic leg disposable diaper. 4,325,372, Cl. 128-287.000.
Tefft, Edward G.; and Tuft, Bernard R., to General Electric Company. Fast isolation diffusion. 4,325,182, Cl. 29-583.000.
Teijin Seiki Company Limited: *See*—
Yamamoto, Toru, 4,325,215, Cl. 60-450.000.
Teixeira, Donald P.: *See*—
Arand, John K.; Muzio, Lawrence J.; and Teixeira, Donald P., 4,325,924, Cl. 423-235.000.
Tejima, Iwao: *See*—
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
Teleflex Incorporated: *See*—
Frankhouse, Thomas J., 4,325,904, Cl. 264-242.000.
Telefonbau und Normalzeit GmbH: *See*—
Barkow, Helmut; and Frank, Karl, 4,326,108, Cl. 179-164.000.
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Templeman, Gareth J.: *See*—
Tibbetts, Merrick S.; and Templeman, Gareth J., 4,325,743, Cl. 127-46.200.
Terman, Lewis M.: *See*—
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.
Teschendorf, Harold A.: *See*—
Burke, James E., 4,325,689, Cl. 431-70.000.
Tessarolo, Francesco: *See*—
Costanzi, Silvestro; Tessarolo, Francesco; and Ballabio, Adriano, 4,325,864, Cl. 524-104.000.
Testco, Inc.: *See*—
Evans, Alyce D.; and Hilty, John R., 4,325,691, Cl. 431-190.000.
Texaco Development Corporation: *See*—
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,326,050, Cl. 528-94.000.
Texaco Inc.: *See*—
Chafetz, Harry; and Lee, Gary D., 4,325,876, Cl. 260-346.740.
Woodle, Robert A., 4,325,818, Cl. 208-326.000.
Zimmerman, Robert L., 4,326,042, Cl. 521-115.000.
Texas Alkyls, Inc.: *See*—
Malpass, Dennis B., 4,325,840, Cl. 252-431.00R.
Texas Instruments Incorporated: *See*—
Boone, Gary W., 4,326,265, Cl. 364-900.000.
Curran, Patrick A., 4,325,180, Cl. 29-571.000.
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,326,199, Cl. 340-622.000.
Textron Inc.: *See*—
Pethis, James J., 4,325,590, Cl. 308-184.00R.
Tharp, James A., to Square D Company. Circuit breaker with self contained adjustable bimetal. 4,326,183, Cl. 337-70.000.
Thebaud, Sacha. Foldable chair. 4,325,577, Cl. 297-45.000.
Thermo King Corp.: *See*—
Howland, Leland L., 4,325,224, Cl. 62-196.00A.

Thibert, Jean-Jacques: *See—*
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, 4,325,675, Cl. 416-223.00R.

Tholander, Lars H. G.: *See—*
Jacobsson, Kurt A. G.; Tholander, Lars H. G.; and Wide, Ulf-Erik, 4,325,702, Cl. 474-56.000.

Thomas J. Lipton, Inc.: *See—*
Harrow, Alastair D.; and Martin, John W., 4,325,976, Cl. 426-104.000.

Thomas, Louis N. Hair strand separating implement. 4,325,393, Cl. 132-160.000.

Thompson, Marc J., to Virtis Company, Inc., The. Shelf arrangement for freeze drying apparatus. 4,325,193, Cl. 34-92.000.

Thompson, Robert E.: *See—*
McNinney, Richard P., Jr.; and Thompson, Robert E., 4,325,292, Cl. 98-115.0SB.

Thompson, Stanley C.; and Schmidt, Glenn H., to Stan Thompson Golf Club Company. Putter with shaft axis focussed at blade keel. 4,325,550, Cl. 273-80.00C.

Thomson-Brandt: *See—*
Maille, Michel, 4,326,099, Cl. 179-1.0GA.

Thomson-CSF: *See—*
DeMan, Pierre; Pimentel, Alberto; Ben Sadou, Jean-Claude; and de Riviere, Charles, 4,326,293, Cl. 455-72.000.

Thornthwaite, David W.: *See—*
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.

Tibbetts, Merrick S.; and Templeman, Gareth J., to PepsiCo, Inc. Process for the enhancement of caramel colorant. 4,325,743, Cl. 127-46.200.

Tickins, Jack J. Drill bit end protectors. 4,325,661, Cl. 408-239.00A.

Tietz, Werner, to ZEISS IKON AG Goerzwerk. Multi-level lock system and method. 4,325,242, Cl. 70-401.000.

Tiffany Industries, Inc.: *See—*
Bell, Joseph M., 4,325,596, Cl. 312-194.000.

Tiletschke, Lothar; and Feldmann, Hellmuth, to Sigma Bauelemente GmbH. Housing device for isolating connecting reinforcements at joints between first and subsequently poured concrete structures. 4,325,533, Cl. 249-188.000.

Tillotson, Henry B.: *See—*
Foster, Leslie W.; and Tillotson, Henry B., 4,326,145, Cl. 313-120.000.

Timex Corporation: *See—*
Sethofer, Nicholas L., 4,325,830, Cl. 252-299.610.

Timken Company, The: *See—*
Otto, Dennis L., 4,325,591, Cl. 308-187.200.

Tios Corporation: *See—*
Salim, Massoud A.; and Hamacher, Thomas L., 4,325,205, Cl. 52-79.100.

Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V. Cellulose-based electric insulation material containing boric anhydride and process for producing same. 4,325,848, Cl. 252-567.000.

Tohi, Yasusuke: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.

Tohkairin, Akira: *See—*
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.

Tohyama, Shigeo, to Hitachi, Ltd. Slit width calibrator for monochromator. 4,325,634, Cl. 356-331.000.

Tokan Kogyo Co., Ltd.: *See—*
Takahashi, Keiichi, 4,325,905, Cl. 264-516.000.

Tokyo Electric Co., Ltd.: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,326,254, Cl. 364-466.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Enokizono, Takatoshi, 4,326,201, Cl. 340-717.000.
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, 4,325,334, Cl. 123-270.000.
Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,232, Cl. 361-127.000.
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,233, Cl. 361-127.000.

Tolman, Chadwick A.: *See—*
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., 4,326,084, Cl. 568-360.000.

Tom Graham & Associates: *See—*
Graham, Thomas S., 4,325,823, Cl. 210-86.000.

Toma, Daniel N., to General Electric Company. Adjustable stoke agitation system. 4,325,234, Cl. 68-133.000.

Tomcufcik, Andrew S.: *See—*
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marisco, Joseph W., Jr., 4,325,955, Cl. 424-251.000.

Topfer, Rainer: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.

Toppan Printing Co., Ltd.: *See—*
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.

Toray Industries, Inc.: *See—*
Sato, Hiroshi; Okamoto, Takehiko; and Asada, Akira, 4,325,915, Cl. 422-135.000.

Torbet, Philip A.: *See—*
Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.

Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, to Canon Kabushiki Kaisha. Cleaning device for an image forming apparatus. 4,325,628, Cl. 355-15.000.

Torisawa, Akira: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.

Toro Company, The: *See—*
Comer, Robert C., 4,325,195, Cl. 37-43.00D.
Foster, Leslie W.; and Tillotson, Henry B., 4,326,145, Cl. 313-120.000.
Witt, Robert H.; and Petersen, Walter J., 4,325,211, Cl. 56-15.800.

Tosco Corporation: *See—*
Haas, Frank C.; and Faudel, Gerald B., 4,325,925, Cl. 423-239.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Fujita, Shigeru, 4,326,255, Cl. 364-476.000.

Totino, Peter J.; and Voza, Alfonse N., to Singer Company, The. Method for sewing a monogram pattern. 4,325,315, Cl. 112-266.100.

Touchton, James J.; and Pederson, Richard J., to Storage Technology Corporation. Constant bandwidth automatic gain control. 4,326,226, Cl. 360-77.000.

Toulan, Roy D., Jr.; and Rensky, Richard, to Quality Audio Components, Inc. Cartridge alignment system. 4,326,283, Cl. 369-55.000.

Toyo Rubber Chemical Industrial Corporation: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.

Toyoda Koki Kabushiki Kaisha: *See—*
Sugita, Kazuhiko, 4,325,585, Cl. 308-9.000.

Toyoda, Minoru, to Aisin Seiki Company, Limited. Key holder. 4,325,243, Cl. 70-456.00R.

Toyoda, Munemitsu; and Adachi, Koichiro, to Sharp Kabushiki Kaisha. Heater disposed below a turntable in a combination microwave and electric oven. 4,326,113, Cl. 219-10.55D.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kato, Takashi; and Tanahashi, Toshio, 4,325,333, Cl. 123-260.000.
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,325,569, Cl. 280-804.000.
Yamamoto, Toru, 4,325,215, Cl. 60-450.000.

Toyota Jidosho Kogyo Kabushiki Kaisha: *See—*
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.

Trianco Redfyre Limited: *See—*
Babbage, Thomas A., 4,325,310, Cl. 110-101.00R.

Trop, Moshe; and Livne, Avinoam, to Ben-Gurion University of the Negev Research and Development Authority. Powdered compositions for cream toppings. 4,325,979, Cl. 426-570.000.

Tropel, Inc.: *See—*
Moore, Robert C., 4,325,637, Cl. 356-359.000.

Trueblood, Richard K., to National Semiconductor Corporation. Thermal shock resistant package having an ultraviolet light transmitting window for a semiconductor chip. 4,326,214, Cl. 357-74.000.

Tsuboshima, Kosaku: *See—*
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.

Tsuda, Naotsune: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.

Tsui, Yu-Ming. Process for manufacturing regenerated leather. 4,325,236, Cl. 69-21.000.

Tsuji Kikuro; and Ishigaki, Masaya, to Dainippon Screen Seizo Kabushiki Kaisha; and Kabushiki Kaisha Dai-ichi Shiko. Method of photographic printing and a photographic original plate for use therein. 4,325,632, Cl. 355-86.000.

Tsuruoka, Takashi: *See—*
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.

Tubbs, Graham S.: *See—*
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.

Tucker, Donald F.: *See—*
Bartish, Charles M.; and Tucker, Donald F., 4,325,932, Cl. 423-402.000.

Tucker, George T.: *See—*
Babus, Stephen R.; and Tucker, George T., 4,325,641, Cl. 366-18.000.

Tuft, Bernard R.: *See—*
Tefft, Edward G.; and Tuft, Bernard R., 4,325,182, Cl. 29-583.000.

Tumasian, Beniamin A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.

Turner, David H.: *See—*
Poyser, Robert H.; and Turner, David H., 4,325,971, Cl. 424-324.000.

Turner, William F. Fuel metering system. 4,325,343, Cl. 123-527.000.

Tyler, Derek E.: *See—*
Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, 4,325,777, Cl. 156-620.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,325,227, Cl. 62-248.000.
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, to Laurel Bank Machine Co., Ltd. Dispenser for making payment of pre-packed paper sheets. 4,325,277, Cl. 83-205.000.
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Postal charge processing system. 4,326,254, Cl. 364-466.000.
Ueda, Hirohisa: *See—*
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.
Ueda, Makoto: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.
Uehara, Keiichi: *See—*
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
UHDE GmbH: *See—*
Bahnisch, Hans-Joachim, 4,326,041, Cl. 518-702.000.
Uhlmann, Joachim, to Gevipi A.G. Single-control mixing cock with plates made of hard material. 4,325,403, Cl. 137-315.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, to Kagome Co., Ltd. Apparatus for adjusting internal pressure of aseptic storage tank. 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, to Kagome Co., Ltd. Aseptic valve. 4,325,401, Cl. 137-240.000.
Ulion, Nicholas E.: *See—*
Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., 4,326,011, Cl. 428-641.000.
Ulveling, Leon, to Paul Wurth S.A. Method and installation of injection of solid fuels into a shaft furnace. 4,325,312, Cl. 110-347.000.
Umeda, Haruhiko, to Kabushiki Kaisha Komatsu Seisakusho. Electric power plant for vehicles. 4,325,451, Cl. 180-294.000.
Umeda, Jun-ichi: *See—*
Aiki, Kunio; Nakamura, Michiharu; and Umeda, Jun-ichi, 4,326,176, Cl. 372-45.000.
Umeda, Naoki: *See—*
Igashira, Toshihiko; Umeda, Naoki; and Abe, Seiko, 4,325,344, Cl. 123-549.000.
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, to Toyota Jidosho Kogyo Kabushiki Kaisha. Shock absorbing bumper of a vehicle. 4,325,574, Cl. 293-120.000.
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Cleomycins and process for producing same. 4,326,054, Cl. 536-17.00R.
UNC Recovery Corporation: *See—*
Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., 4,325,918, Cl. 423-10.000.
Ungnadner, Peter; Blockinger, Peter; Winkler, Friedrich; and Lermann, Peter, to AGFA-Gevaert Aktiengesellschaft. Film advancing arrangement. 4,325,523, Cl. 242-205.000.
Uni-Cardan AG: *See—*
Girguis, Sobhy L., 4,325,232, Cl. 64-21.000.
Union Carbide Corporation: *See—*
Braun, David B.; and Rosen, Meyer R., 4,325,861, Cl. 523-205.000.
Smith, Derek R.; and Worgan, Gordon P., 4,325,174, Cl. 29-434.000.
Watson, Stuart L.; and Westfall, Paul M., 4,325,831, Cl. 252-354.000.
Union Oil Company of California: *See—*
Gowdy, Hugh W.; and Fenton, Donald M., 4,325,936, Cl. 423-573.00R.
Young, Dean A., 4,325,929, Cl. 423-339.000.
Union Special G.m.b.H.: *See—*
Niem, Wolfgang, 4,325,314, Cl. 112-199.000.
United McGill Corporation: *See—*
Bryant, Mark A., 4,325,922, Cl. 423-210.000.
United States of America
Air Force: *See—*
Regan, David M.; and Beverley, Kenneth I., 4,325,697, Cl. 434-258.000.
Army: *See—*
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,325,309, Cl. 109-49.500.
Miller, Thomas G.; and Rogers, Billie O., 4,325,252, Cl. 73-190.0EW.
O'Neill, Cormac G., 4,325,340, Cl. 123-447.000.
Rittenbach, Otto E.; and Olesch, Reinhard G., 4,326,272, Cl. 367-93.000.
Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., 4,325,635, Cl. 356-349.000.
Siorek, Richard W., 4,325,468, Cl. 188-282.000.
Voigt, H. William, Jr.; and Banker, Bernard R., 4,325,759, Cl. 149-19.920.
Energy: *See—*
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.
Golestaneh, Ahmad A., 4,325,217, Cl. 60-527.000.
Griffith, William L.; Compere, Alicia L.; and Holleman, James W., 4,326,037, Cl. 435-274.000.
Hwang, Jaw-Yeu, 4,325,425, Cl. 165-1.000.
Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., 4,326,117, Cl. 219-85.0CM.
McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., 4,326,122, Cl. 219-544.000.
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., 4,325,530, Cl. 248-317.000.
Plancher, Henry; and Petersen, Joseph C., 4,325,738, Cl. 106-273.00N.
Rinde, James A., 4,325,737, Cl. 106-122.000.
Waldrop, Forrest B.; and Washington, Charles A., 4,325,791, Cl. 204-32.00R.
Navy: *See—*
Cooke, Gordon R., 4,325,246, Cl. 73-1.00E.
Kaloi, Cyril M., 4,326,203, Cl. 343-700.0MS.
Kohler, Janet K., 4,326,015, Cl. 429-52.000.
Panayappan, Ramanathan; and Venezky, David L., 4,325,744, Cl. 134-4.000.
Pastine, Donald J., 4,325,305, Cl. 102-201.000.
Swiatosz, Edmund, 4,326,119, Cl. 219-272.000.
Yoder, Max N., 4,325,181, Cl. 29-571.000.
U.S. Philips Corporation: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Klaus, Werner, 4,326,182, Cl. 336-198.000.
Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, 4,326,136, Cl. 307-451.000.
Smeets, Eugenius T. J. M., 4,326,211, Cl. 357-30.000.
Van den Brink, Hans G.; and Lamboo, Theodorus F., 4,326,178, Cl. 372-61.000.
Verboom, Johannes J.; and Carasso, Marino G., 4,326,282, Cl. 369-48.000.
United States Steel Corporation: *See—*
Aiken, John E.; and Didycz, William J., 4,325,921, Cl. 423-210.000.
United Technologies Corporation: *See—*
Brown, Edgar E.; and Ruckle, Duane L., 4,325,756, Cl. 148-32.500.
Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., 4,326,011, Cl. 428-641.000.
McFarlin, David J., 4,325,220, Cl. 62-55.500.
Universal Precision Machining Co.: *See—*
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.
University of California, The Regents of the: *See—*
Sarkar, Siddhartha, 4,326,026, Cl. 435-2.000.
University of Delaware: *See—*
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Williams, Ferd E.; and Morton, David C., 4,326,007, Cl. 428-333.000.
University of Southern California: *See—*
Yen, Teh Fu; and Chan, Mankin, 4,325,433, Cl. 166-273.000.
University of Waterloo: *See—*
Smith, James G.; and Bubbar, Gurbachan L., 4,326,090, Cl. 585-469.000.
UOP Inc.: *See—*
Antos, George J., 4,325,816, Cl. 208-139.000.
Arena, Blaise J., 4,325,742, Cl. 127-46.200.
Neuzil, Richard W., 4,326,092, Cl. 585-828.000.
Peters, Kenneth D., 4,325,806, Cl. 208-64.000.
Peters, Kenneth D., 4,325,807, Cl. 208-64.000.
Upjohn Company, The: *See—*
Heather, James B.; and White, David R., 4,325,881, Cl. 260-397.450.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,325,875, Cl. 260-346.220.
Ureda, Mark S., to Altec Corporation. Acoustical transformer for compression-type loudspeaker with an annular diaphragm. 4,325,456, Cl. 181-159.000.
Urion, Kenard E.; and Cleminshaw, Douglas R., to Scott Paper Company. Method of forming a one-piece member with a compartment therein. 4,325,176, Cl. 29-450.000.
Utile Engineering Company Limited, The: *See—*
Sixsmith, Herbert; and Poole, Robert E., 4,325,672, Cl. 415-53.00T.
Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, to Nippon Electric Company, Ltd. Method of manufacturing ceramic capacitors. 4,325,763, Cl. 156-89.000.
Vad, Laszlo: *See—*
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Vaisman, Leonid M.: *See—*
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Valditerra, Sergio, to Canron Inc. (Montreal). Machine for the renewal of railway tracks. 4,325,306, Cl. 104-2.000.
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Scott, William H.; and Wagdy, Mohamed K., 4,325,643, Cl. 366-200.000.
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Weaver, Richard L. Discharge closure for silo unloader. 4,325,502, Cl. 222-504.000.
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Welsby, Dennis H.; and Dewson, Alan G., to E. Braude (London) Limited. Electric immersion heater for heating corrosive liquids. 4,326,121, Cl. 219-523.000.

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Wen, John W.: *See—*
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Werwa, Harold. Process for fabricating a self-contained ink applicator for continuous imprinting on non-absorbent surfaces. 4,325,179, Cl. 29-458.000.
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Young, Ruperto S., 4,325,370, Cl. 128-245.000.
West Electric Co., Ltd.: *See—*
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Szedon, John R., 4,326,165, Cl. 324-158.00R.
Willertz, Lothar E., 4,325,259, Cl. 73-653.000.
Weston, Charles W.; and Wen, John W., to Agrico Chemical Company. Purified monoammonium phosphate process. 4,325,927, Cl. 423-310.000.
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White Consolidated Industries, Inc.: *See—*
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Whitlock, David R., to Advanced Energy Dynamics, Inc. High tension electrostatic separators. 4,325,820, Cl. 209-127.00R.
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Wicks, Jerome L. Patio door and window guard system invention. 4,325,203, Cl. 49-57.000.
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Wilford, E. Burke. Aircraft carrier. 4,325,317, Cl. 114-261.000.
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Wilkinson, Margaret. Sports garment. 4,325,378, Cl. 128-501.000.
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Will, Fritz G., to General Electric Company. Positive electrode for lead acid battery. 4,326,017, Cl. 429-228.000.
Willertz, Lothar E., to Westinghouse Electric Corp. Vibration amplitude measuring device. 4,325,259, Cl. 73-653.000.
William H. Rorer, Inc.: *See—*
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Williams, Ferd E.; and Morton, David C., to University of Delaware. Electo-luminescent structure. 4,326,007, Cl. 428-333.000.
Williams, Robert E.: *See—*
Bolt, Reginald C.; Dowding, John G.; and Williams, Robert E., 4,325,250, Cl. 73-38.000.
Willis, Frank M., to Du Pont de Nemours, E. I., and Company. Apparatus for discharging material. 4,325,682, Cl. 418-48.000.
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Winger, James W.: *See—*
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Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, to CKD Praha, oborovy podnik. Circuit arrangement of an inverted current rectifier with self commutation. 4,326,246, Cl. 363-138.000.
Winter, Joseph: *See—*
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Winter, Robert A.; and Steger, David J., to Merriman Holbrook, Inc. Snatch block. 4,325,537, Cl. 254-405.000.
Winzer, Gerhard; and Auracher, Franz, to Siemens Aktiengesellschaft. Branching element for monomode light waveguides and the method of manufacture. 4,325,605, Cl. 350-96.150.
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Witt, Robert H.; and Petersen, Walter J., to Toro Company, The. Floating deck for rider mower. 4,325,211, Cl. 56-15.800.
Witte, Hans-H., to Siemens Aktiengesellschaft. Input and output coupler device. 4,325,604, Cl. 350-96.150.
Wohlsen, William D., to Combustion Engineering, Inc. Spacer grid for reducing bowing in a nuclear fuel assembly. 4,325,786, Cl. 376-442.000.
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, to BASF Aktiengesellschaft. Production of anhydrous or substantially anhydrous formic acid. 4,326,073, Cl. 562-609.000.
Wolf, Herman B. Geothermal heating and cooling system. 4,325,228, Cl. 62-260.000.
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Woodle, Robert A., to Texaco, Inc. Dual solvent refining process. 4,325,818, Cl. 208-326.000.
Woods, Roger A.: *See—*
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Woog, Manfred J. Precious metal recovery cartridge and method. 4,325,732, Cl. 75-109.000.
Wooldridge, James E., to Allis-Chalmers Corporation. Mounting arrangement for electrostatic precipitator. 4,325,714, Cl. 55-143.000.
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Worley, Arthur C., to Exxon Research & Engineering Co. Reformer furnace seal. 4,325,916, Cl. 422-197.000.
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Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, to Biuro Projektow Przemyslu Metali Niezelaznych "Bipromet". Smelting furnace for direct obtaining of copper from ore concentrates/and copper ores. 4,325,538, Cl. 266-190.000.
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marisco, Joseph W., Jr., to American Cyanamid Company. Substituted 3-benzhydrylthiazolo(3,2-a)pyrimidines. 4,325,955, Cl. 424-251.000.
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Wu, An C. Cooling pillow with heat dissipator. 4,325,151, Cl. 5-441.000.
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Wust, Alfredo; and Hammerstrom, Knut, to Bayer Aktiengesellschaft. Process for separating off phenol from a mixture thereof with a cresol. 4,325,789, Cl. 203-67.000.

Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., to GTE Products Corporation. Adaptor for high intensity arc discharge lamps. 4,326,149, Cl. 315-289.000.

Wynne, John R. Fluid flow equalizing valve arrangement. 4,325,400, Cl. 137-101.000.

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Yamada, Kozo; Ohba, Yasuhiro; and Matsui, Seiichi, to Honda Giken Kogyo Kabushiki Kaisha. Three-wheeled vehicle with a container. 4,325,562, Cl. 280-62.000.

Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control system for single lens reflex cameras. 4,325,615, Cl. 354-24.000.

Yamagiwa, Kazuo; and Machida, Yukihiko, to Sony Corporation. Video signal recording and/or reproducing apparatus with gain control. 4,326,223, Cl. 360-33.000.

Yamaguchi, Hiromasa: *See*—
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Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Method of controlling fluid flow rate using on-off type electromagnetic valve. 4,325,347, Cl. 123-571.000.

Yamaguchi, Teruo, to Narumi China Corporation. Casing comprising a barrier for intercepting alpha particles from a sealing layer. 4,326,095, Cl. 174-52.0FP.

Yamaguchi, Youzi: *See*—
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Yamaha, Hatsudoki, Kabushiki, Kaisha: *See*—
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Yamamoto, Shinji: *See*—
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Yamamoto, Toru, to Teijin Seiki Company Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic apparatus. 4,325,215, Cl. 60-450.000.

Yamamoto, Yoshihiro: *See*—
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Yamamura Glass Kabushiki Kaisha: *See*—
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Yamamura, Masato: *See*—
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Yamana, Hideo: *See*—
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.

Yamaoka, Tetsuo: *See*—
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,325,621, Cl. 354-145.000.

Yamashita, Masami: *See*—
Miyaka, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, 4,326,046, Cl. 525-276.000.

Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. β, γ-Dihydropolyprenyl alcohol and hypotensive pharmaceutical composition containing same. 4,325,974, Cl. 424-343.000.

Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, to Hitachi, Ltd. Fuel control device for fuel injection system for internal combustion engine. 4,325,341, Cl. 123-472.000.

Yamazaki, Masafumi: *See*—
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.

Yamazaki, Masahiro, to Hitachi, Ltd. Process for recovering nitrogen under pressure in air separation apparatus. 4,325,719, Cl. 62-30.000.

Yamazaki, Takeo: *See*—
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.

Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Lightning arrester. 4,326,233, Cl. 361-127.000.

Yanagisawa, Kazuhisa: *See*—
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.

Yanagisawa, Masahiro, to Nippon Electric Co. Ltd. Magnetic record member and process for manufacturing the same. 4,326,229, Cl. 360-135.000.

Yanai, Shaul: *See*—
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.

Yanata, Kohsaki: *See*—
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.

Yang, Yin-Lung: *See*—
Chiang, Nei-Ho, 4,325,671, Cl. 415-43.000.

Yano, Yasuhiro: *See*—
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.

Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, to Olin Corporation. Method and apparatus for reforming an improved strip of material from a starter strip of material. 4,325,777, Cl. 156-620.000.

Yasuda, Isao: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.

Yates, Ronald L., to Dow Chemical Company, The. Process for reacting alkylene oxides with hydroxyl-containing initiator compounds. 4,326,047, Cl. 525-507.000.

Yeda Research & Development Co., Ltd.: *See*—
Shtrikman, Shmuel, 4,326,138, Cl. 310-36.000.
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.

Yee, Yen S.: *See*—
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.

Yen, Teh Fu; and Chan, Mankin, to University of Southern California. Pre-caustic flood treatment. 4,325,433, Cl. 166-273.000.

Yoder, Max N., to United States of America, Navy. Simplified fabrication method for high-performance FET. 4,325,181, Cl. 29-571.000.

Yokoo, Masahide: *See*—
Wakatsuki, Goroei; and Yokoo, Masahide, 4,325,265, Cl. 74-7.00R.

Yokota, Tethuya: *See*—
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.

Yokoyama, Hiroshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Four-cycle internal combustion engine. 4,325,346, Cl. 123-568.000.

Yoneyama, Goro: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.

Yonezawa, Masatomo: *See*—
Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, 4,325,763, Cl. 156-89.000.

York, Floyd R. Saw buck. 4,325,543, Cl. 269-295.000.

Yoshida Kogyo K.K.: *See*—
Kanzaka, Yoshihiro, 4,325,185, Cl. 29-770.000.
Kirii, Kazuo, 4,325,173, Cl. 29-408.000.
Omori, Shigenori, 4,325,184, Cl. 29-766.000.

Yoshida, Syotaroh: *See*—
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, 4,325,750, Cl. 148-6.14R.

Yoshida, Takashi: *See*—
Nishizawa, Jun-ichi; and Yoshida, Takashi, 4,326,209, Cl. 357-22.000.

Yoshimura, Hirofumi: *See*—
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,326,112, Cl. 219-10.55F.

Yoshioka, Masahiro: *See*—
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.

Young, Dean A., to Union Oil Company of California. Method of preparing crystalline silica polymorph. 4,325,929, Cl. 423-339.000.

Young, Hartley F., to Ralph McKay Limited. Method for forming rail clips. 4,325,511, Cl. 238-349.000.

Young, Janis Marie: *See*—
Young, Ruperto S., 4,325,370, Cl. 128-245.000.

Young, Ruperto S., to Young, Janis Marie; and Wessendorf, Roberta H. Disposable device for fixation of the barium enema tip. 4,325,370, Cl. 128-245.000.

Yu, Jing-peir; and Bromely, James E., to Monsanto Company. High speed spinning of large dpf polyester yarn. 4,325,765, Cl. 156-167.000.

Yuasa, Sueto. Coacting wheel ball emitting device of tennis training system. 4,325,351, Cl. 124-78.000.

Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, to Mitsubishi Petrochemical Co., Ltd. Process for production of L-aspartic acid. 4,326,029, Cl. 435-109.000.

Zahnraderfabrik Renk Aktiengesellschaft, Firma: *See*—
Kugler, Artur; and Zaunberger, Franz X., 4,325,330, Cl. 123-41.120.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Lang, Armin, 4,325,286, Cl. 91-373.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.

Zatulovsky, Lev M.: *See*—
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.

Zaunberger, Franz X.: *See*—
Kugler, Artur; and Zaunberger, Franz X., 4,325,330, Cl. 123-41.120.

Zdanys, John, Jr., to CTS Corporation. Preprogrammed slide switch assembly. 4,326,110, Cl. 200-16.00R.

ZEISS IKON AG Goerzwerk: *See*—
Tietz, Werner, 4,325,242, Cl. 70-401.000.
Zeloof, Haskel. Apparatus for preparing wood for bending. 4,325,420, Cl. 144-271.000.
Zepp, Lawrence P.: *See*—
Kern, Calvin V.; and Zepp, Lawrence P., 4,325,700, Cl. 440-61.000.
Zerle, Ludwig; and Scharm, Klaus. Method and apparatus for controlling size of extruded tube. 4,325,897, Cl. 264-40.300.
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, to Kali-Chemie Pharma GmbH. 2-Acylaminomethyl-1,4-benzodiazepine derivatives and their salts and pharmaceutical compositions thereof. 4,325,957, Cl. 424-263.000.
Zimmerman, Robert L., to Texaco Inc. Morpholine and piperazine derivatives in a catalyst system for polyester-based polyurethane foams. 4,326,042, Cl. 521-115.000.
Zimmerman, Robert L.: *See*—
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,326,050, Cl. 528-94.000.
Zink, George M.: *See*—
Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., 4,325,163, Cl. 15-330.000.
Ziolkowski, Antoni M. Method and apparatus for determining acoustic properties in the earth. 4,326,271, Cl. 367-16.000.
Zuber, Bretislav P., to Northern Telecom Limited. Apparatus for stranding wire. 4,325,214, Cl. 57-293.000.
Zuvela, Bernard R., to Scientific Drilling Controls. Lengthening drill string containing an instrument. 4,325,438, Cl. 175-50.000.
Zverkov, Garik E.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ameron, Inc.: *See*—
Law, Gabriel H.; and Gysegem, Albert P., Re. 30,909, Cl. 71-67.000.

Aoki, Eiichiro: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

Burnett, James E., to Mead Corporation, The. Optical scanning and encoding device. Re. 30,911, Cl. 358-75.000.

Coles Crane Ltd.: *See*—
Lester, Robert J.; and Murta, Raymond, Re. 30,905, Cl. 52-115.000.

Friedline, Ernest J.; and Warren, Donald W., to Kennametal Inc. Cutting insert. Re. 30,908, Cl. 407-114.000.

Gauch, Hermann; and Schopf, Dieter, to Union Special G.m.b.H. Cooling device for sewing machines. Re. 30,907, Cl. 112-280.000.

Gysegem, Albert P.: *See*—
Law, Gabriel H.; and Gysegem, Albert P., Re. 30,909, Cl. 71-67.000.

Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Envelope generator. Re. 30,906, Cl. 84-1.260.

Intellectual Property Development Corporation: *See*—
Weigand, Alan H., Re. 30,910, Cl. 424-238.000.

Kennametal Inc.: *See*—
Friedline, Ernest J.; and Warren, Donald W., Re. 30,908, Cl. 407-114.000.

Law, Gabriel H.; and Gysegem, Albert P., to Ameron, Inc. Siloxane-tin coatings and their use for protecting materials from growth of pestiferous organisms. Re. 30,909, Cl. 71-67.000.

Lester, Robert J.; and Murta, Raymond, to Coles Crane Ltd. Multi-section telescopic boom. Re. 30,905, Cl. 52-115.000.

Mead Corporation, The: *See*—
Burnett, James E., Re. 30,911, Cl. 358-75.000.

Murta, Raymond: *See*—
Lester, Robert J.; and Murta, Raymond, Re. 30,905, Cl. 52-115.000.

Nakada, Akira: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

Schopf, Dieter: *See*—
Gauch, Hermann; and Schopf, Dieter, Re. 30,907, Cl. 112-280.000.

Suzuki, Tsutomu: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

Union Special G.m.b.H.: *See*—
Gauch, Hermann; and Schopf, Dieter, Re. 30,907, Cl. 112-280.000.

Warren, Donald W.: *See*—
Friedline, Ernest J.; and Warren, Donald W., Re. 30,908, Cl. 407-114.000.

Weigand, Alan H., to Intellectual Property Development Corporation. Reducing cholesterol levels. Re. 30,910, Cl. 424-238.000.

Yamaga, Eiichi: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

LIST OF DESIGN PATENTEES

Acoustical Design Incorporated: *See*—
Cunningham, Donald R.; and Sulewsky, James E., 263,956, Cl. D14-03.000.

Adkinson, Joseph E. Table or the like. 263,909, 4-20-82, Cl. D6-177.000.

AGFA-Gevaert AG: *See*—
Schlagheck, Norbert; Schultes, Herbert; and Rabold, Lutz, 263,963, Cl. D16-34.000.

Allibert Exploitation, S.A.: *See*—
Cornou, Jean, 264,014, Cl. D34-43.000.

American Cyanamid Company: *See*—
Grip, John A., 263,929, Cl. D9-370.000.

American Hospital Supply Corporation: *See*—
Pelly, Charles W., 263,958, Cl. D15-7.000.

AMG Industries, Inc.: *See*—
Anderson, William M., Jr., 263,919, Cl. D7-130.000.

Anderson, William M., Jr., to AMG Industries, Inc. Trivet. 263,919, 4-20-82, Cl. D7-130.000.

Ankarswed, Sven J., to Ankarswedshus AB Vasteras. Prefabricated wall construction unit for houses. 264,001, 4-20-82, Cl. D25-80.000.

Ankarswedshus AB Vasteras: *See*—
Ankarswed, Sven J., 264,001, Cl. D25-80.000.

Antone, Laurence J. Wood burning stove or similar article. 263,994, 4-20-82, Cl. D23-97.000.

Antretter, Richard; and Siersch, Werner, to RIAN-Apparate-und Vorrichtungsbau Gesellschaft mit beschrankter Haftung. Electrical accessory plug for automobile lighter outlet. 263,951, 4-20-82, Cl. D13-24.000.

Arad, Avi; and Kane, Earl B., to Empire of Carolina, Inc. Child's riding vehicle. 263,944, 4-20-82, Cl. D12-112.000.

Atlantic Vacuum Parts Corp.: *See*—
Genoa, Joseph, 264,011, Cl. D32-31.000.

Bastz Ceramics: *See*—
Katcher, Barry D., 263,939, Cl. D11-143.000.

Balda-Werke: *See*—
Lange, Karl-Heinz, 263,961, Cl. D16-6.000.

Ball Corporation: *See*—
Jones, Howard L.; and Blackman, John M., 263,933, Cl. D9-447.000.

Barozzini, Claude, to McGraw-Edison Company. Electrical component tray for a luminaire. 264,008, 4-20-82, Cl. D26-113.000.

Behl, Leonard I. Buoyant amusement device. 263,982, 4-20-82, Cl. D21-237.000.

Berg, Roger M. Broiler or the like. 263,960, 4-20-82, Cl. D15-104.000.

Bergman, Andrew I., to Quaker Oats Company, The. Infant teething toy. 263,999, 4-20-82, Cl. D24-45.000.

Bessone, Carlo S.; and Citino, Richard J., to GTE Products Corporation. Combined lamp and planter. 264,006, 4-20-82, Cl. D26-55.000.

Blackman, John M.: *See*—
Jones, Howard L.; and Blackman, John M., 263,933, Cl. D9-447.000.

Bluestein, Bernard B.: *See*—
Ernest, Robert O.; Steinkamp, Norman A.; and Bluestein, Bernard B., 263,959, Cl. D32-21.000.

Boyd, Charles N. Portable barbecue. 263,918, 4-20-82, Cl. D7-107.000.

Brand, Kim J. Game playing board. 263,974, 4-20-82, Cl. D21-16.000.

Braun AG: *See*—
Oberheim, Robert, 263,998, Cl. D24-41.000.

Breneman, Jack J., to Quaker Oats Company, The. Toy dump truck. 263,977, 4-20-82, Cl. D21-134.000.

Brentham, Jerry D. Physical exerciser. 263,978, 4-20-82, Cl. D21-195.000.

Bridgestone Tire Company Limited: *See*—
Kojima, Hiroshi; Nishio, Hideaki; and Yokoyama, Hideki, 263,946, Cl. D12-146.000.

Brown Group Recreational Industries, Inc.: *See*—
Carlson, Harold W., 263,983, Cl. D21-245.000.

Broyhill, Willis C. Electrical box holder. 263,950, 4-20-82, Cl. D13-12.000.

Bruno, Robert H., to Stanley Works, The. Paint scraper handle. 263,922, 4-20-82, Cl. D32-48.000.

Busch & Muller: *See*—
Niggemann, Fritz, 263,948, Cl. D12-189.000.

Butman, John C., to Itek Corporation. Apparatus for selecting eyeglass frames. 263,964, 4-20-82, Cl. D20-10.000.

C.G. Crystal Glass Tube & Cylinder Co.: *See*—
Petersen, Walter P., 263,895, Cl. D3-29.000.

Campbell, Hugh G. Interlock crib. 264,003, 4-20-82, Cl. D25-80.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; and Odagawa, Kazuyoshi, 263,968, Cl. D18-7.000.
Hirata, Takashi; and Hirose, Kunio, 263,969, Cl. D18-7.000.
Sakai, Masaaki; and Motoyoshi, Junichi, 263,967, Cl. D18-7.000.

Carlson, Harold W., to Brown Group Recreational Industries, Inc. Child's outdoor play gym. 263,983, 4-20-82, Cl. D21-245.000.

Central Trust Company, N.A., The: *See*—
Hauser, Charles; and Johnson, Sharon, 264,012, Cl. D99-28.000.

Chung, Tae Yong. Needle holder. 263,894, 4-20-82, Cl. D3-21.000.

Citino, Richard J.: *See*—
Bessone, Carlo S.; and Citino, Richard J., 264,006, Cl. D26-55.000.

Coleman Company, Inc., The: *See*—
Milliman, Keith, 263,987, Cl. D22-14.000.

Coley, Sidney J. Bush knife or the like. 263,986, 4-20-82, Cl. D22-1.000.

Cordis Dow: *See*—
Preussner, Andreas, 263,997, Cl. D24-8.000.

Corning Glass Works: *See*—
Swan, John C., 264,004, Cl. D26-23.000.

Cornou, Jean, to Allibert Exploitation, S.A. Tote tray. 264,014, 4-20-82, Cl. D34-43.000.

Cunningham, Donald R.; and Sulewsky, James E., to Acoustical Design Incorporated. Acoustical enclosure for teleprinters or the like. 263,956, 4-20-82, Cl. D14-03.000.

Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Container adaptor ring or the like. 263,932, 4-20-82, Cl. D9-434.000.

Dallaire, Raymond. Window component extrusion. 264,000, 4-20-82, Cl. D25-74.000.

Dalton, Beverly. Shirt. 263,890, 4-20-82, Cl. D2-208.000.

Dansk International Designs Ltd.: *See*—
Hube, Vivanna T. B., 263,921, Cl. D7-137.000.

Dart Industries Inc.: *See*—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 263,932, Cl. D9-434.000.

Dassonville, Bernard, to Onis. Display rack for carpet samples. 263,901, 4-20-82, Cl. D6-23.000.

Data Packaging Corporation: *See*—
Pepicelli, Pasquale L., Jr.; and Yonkers, Edward, 263,907, Cl. D6-130.000.

De Coster, Pieter K. J.: *See*—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 263,932, Cl. D9-434.000.

de Nola, Andre. Perfume bottle. 263,931, 4-20-82, Cl. D9-406.000.

Dewey, George G., to Illinois Tool Works Inc. Roof insulation washer. 263,927, 4-20-82, Cl. D8-399.000.

Dewey, George G., to Illinois Tool Works Inc. Roof insulation washer. 263,928, 4-20-82, Cl. D8-399.000.

Drackett Company, The: *See*—
Pardo, John; and Jones, David A., 263,930, Cl. D9-373.000.

Ebert, Karl, to Max Widenmann Armaturenfabrik. Lugged annular coupling. 263,992, 4-20-82, Cl. D23-44.000.

Empire of Carolina, Inc.: *See*—
Arad, Avi; and Kane, Earl B., 263,944, Cl. D12-112.000.

Ernest, Robert O.; Steinkamp, Norman A.; and Bluestein, Bernard B., to Sunbeam Corporation. Canister vacuum cleaner. 263,959, 4-20-82, Cl. D32-21.000.

Fischer, Warren G. X-ray film processor. 263,996, 4-20-82, Cl. D24-2.000.

Fishman, David: *See*—
Quiroga, John S.; Fishman, Edward; Fishman, David; and Rohlffs, Duke, 263,975, Cl. D21-37.000.

Fishman, Edward: *See*—
Quiroga, John S.; Fishman, Edward; Fishman, David; and Rohlffs, Duke, 263,975, Cl. D21-37.000.

Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined shower handle and escutcheon. 263,989, 4-20-82, Cl. D23-31.000.

Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined toilet trip lever and escutcheon. 263,990, 4-20-82, Cl. D23-31.000.

Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined lavatory spout and drain control. 263,991, 4-20-82, Cl. D23-32.000.

Flora, Paul. Support for flexible dryer vent pipe. 263,905, 4-20-82, Cl. D6-114.000.

Francis, Ross H., to Southern Machine Products, Inc. Mobile carriage for compressors or the like. 263,942, 4-20-82, Cl. D12-36.000.

Fuerneisen, Thomas J., to Microtime, Incorporated. Timepiece card holder. 263,934, 4-20-82, Cl. D10-2.000.

Genoa, Joseph, to Atlantic Vacuum Parts Corp. Vacuum cleaner hose adapter. 264,011, 4-20-82, Cl. D32-31.000.

Glasgow, James P., to Mary Kay Cosmetics, Inc. Compartmented storage box. 263,896, 4-20-82, Cl. D3-30.100.

Gordan, Miroslav. Necklace with illuminable pendant. 263,936, 4-20-82, Cl. D11-7.000.

Gordan, Miroslav. Necklace with illuminable pendant. 263,937, 4-20-82, Cl. D11-7.000.

Gordon, Kenneth R. Artificial Christmas tree. 263,938, 4-20-82, Cl. D11-118.000.

Graf, Darrell G. Portable nozzle mount for firefighting nozzle. 264,010, 4-20-82, Cl. D29-5.000.

Grip, John A., to American Cyanamid Company. Bottle. 263,929, 4-20-82, Cl. D9-370.000.

GTE Products Corporation: *See*—
Bessone, Carlo S.; and Citino, Richard J., 264,006, Cl. D26-55.000.

Hardigg Industries, Inc.: *See*—
Hardigg, James S., 264,002, Cl. D25-87.000.

Hardigg, James S., to Hardigg Industries, Inc. Skeletal panel or similar article. 264,002, 4-20-82, Cl. D25-87.000.

Hardin, David B. Pickup topper. 263,947, 4-20-82, Cl. D12-156.000.

Hardy, Terence: *See*—
Litchfield, Leon G.; and Hardy, Terence, 263,914, Cl. D6-191.000.

Hauser, Charles; and Johnson, Sharon, to Central Trust Company, N.A., The. Teller machine module. 264,012, 4-20-82, Cl. D99-28.000.

Heinrichsdorff, Wolff, to Life Savers, Inc. Combined package display and dispensing rack. 263,911, 4-20-82, Cl. D6-181.000.

Heinrichsdorff, Wolff, to Life Savers, Inc. Combined package display and dispensing rack. 263,912, 4-20-82, Cl. D6-181.000.

Henry, Larry B. Automobile body shell. 263,943, 4-20-82, Cl. D12-92.000.

Heritage, Robert, to Rotaflex (Great Britain) Limited. Spotlight fitting. 264,007, 4-20-82, Cl. D26-74.000.

Hinsham, Kenneth R. Fire screen. 263,924, 4-20-82, Cl. D7-207.000.

Hirata, Takashi; and Odagawa, Kazuyoshi, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 263,968, 4-20-82, Cl. D18-7.000.

Hirata, Takashi; and Hirose, Kunio, to Canon Kabushiki Kaisha. Electronic dictionary. 263,969, 4-20-82, Cl. D18-7.000.

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596.13 4,325,410
596.14 4,325,409
596.2 4,325,408
601 4,325,411
625.65 4,325,412

CLASS 138

109 4,325,413
155 4,325,414

CLASS 141

1 4,325,415
95 4,325,416
98 4,325,417
182 4,325,418
302 4,325,419

CLASS 144

271 4,325,420
326 R 4,325,421

CLASS 148

1.5 4,325,747
2 4,325,748
6.14 R 4,325,749
4,325,750
12 F 4,325,751
12.1 4,325,752
20.3 4,325,753
22 4,325,754
32 4,325,755
32.5 4,325,756
103 4,325,757
135 4,325,758

CLASS 149

19.92 4,325,759

CLASS 152

352 R 4,325,422
361 R 4,325,423

CLASS 156

49 4,325,760
69 4,325,761
86 4,325,762
89 4,325,763
123 R 4,325,764
167 4,325,765
171 4,325,766
196 4,325,767
206 4,325,768
217 4,325,769
230 4,325,770
261 4,325,771
294 4,325,772
471 4,325,773
542 4,325,774
584 4,325,775
610 4,325,776
620 4,325,777
643 4,325,778
651 4,325,779
659.1 4,325,780

CLASS 159

13 A 4,325,781
47 R 4,325,782

CLASS 162

88 4,325,783
135 4,325,784

CLASS 164

5 4,325,424

CLASS 165

1 4,325,425
2 4,325,426
27 4,325,427
72 4,325,428
80 E 4,325,429
135 4,325,430

CLASS 166

117.5 4,325,431
245 4,325,432
273 4,325,433
321 4,325,434

CLASS 172

102 4,325,435

CLASS 173

13 4,325,436
131 4,325,437

CLASS 174

23 R 4,326,094
52 FP 4,326,095
84 R 4,326,096
155 4,326,097

CLASS 175

50 4,325,438
329 4,325,439

CLASS 177

25 4,325,440
4,325,441

CLASS 178

22.08 4,326,098

CLASS 179

1 GA 4,326,099
1 SD 4,326,101
1 VE 4,326,100
2 C 4,326,102

6.3 R 4,326,103
16 AA 4,326,104
16 EA 4,326,105
81 B 4,326,106
98 4,326,107
164 4,326,108
170 NC 4,326,109

CLASS 180

6.48 4,325,442
6.54 4,325,443
70 R 4,325,444
74 4,325,445
89.17 4,325,446
132 4,325,447
215 4,325,448
217 4,325,449
247 4,325,450
294 4,325,451
306 4,325,452

CLASS 181

135 4,325,453
145 4,325,454
148 4,325,455
159 4,325,456
210 4,325,457
227 4,325,458
248 4,325,459
259 4,325,460
286 4,325,461

CLASS 182

93 4,325,462
155 4,325,463

CLASS 187

9 E 4,325,464

CLASS 188

4 R 4,325,465
24.12 4,325,467
71.4 4,325,466
282 4,325,468

CLASS 190

53 4,325,469

CLASS 192

16 4,325,470
48.1 4,325,472
85 AA 4,325,471

CLASS 193

35 R 4,325,473

CLASS 198

429 4,325,475
448 4,325,476
461 4,325,477
699 4,325,478
733 4,325,479
781 4,325,474
841 4,325,480

CLASS 200

16 R 4,326,110
61.45 R 4,326,111

CLASS 202

106 4,325,787
234 4,325,788

CLASS 203

67 4,325,789

CLASS 204

27 4,325,790
32 R 4,325,791
151 4,325,792
157.1 R 4,325,793
159.23 4,325,794
180 G 4,325,796
180 R 4,325,795
195 P 4,325,797
248 4,325,798
297 W 4,325,799

CLASS 206

503 4,325,481
625 4,325,482

CLASS 208

8 LE 4,325,800
10 4,325,801
4,325,802
11 LE 4,325,803
58 4,325,804
4,325,805
64 4,325,806
4,325,807
65 4,325,808
91 4,325,809
112 4,325,810
113 4,325,811
119 4,325,812
120 4,325,813
4,325,814
127 4,325,815

139 4,325,816
164 4,325,817
326 4,325,818

CLASS 209

3.1 4,325,483
10 4,325,819
127 R 4,325,820
166 4,325,821
251 4,325,822

CLASS 210

86 4,325,823
90 4,325,824
371 4,325,825
776 4,325,826

CLASS 211

66 4,325,484
4,325,485
71 4,325,486

CLASS 215

330 4,325,487

CLASS 219

10.55 A 4,326,114
10.55 D 4,326,113
10.55 F 4,326,112
56.1 4,326,115
61.7 4,326,116
85 CM 4,326,117
121 LC 4,326,118
272 4,326,119
286 4,326,120
523 4,326,121
544 4,326,122

CLASS 220

1.5 4,325,488
2.2 4,325,489
269 4,325,490
316 4,325,491
335 4,325,492
416 4,325,493

CLASS 221

13 4,325,494

CLASS 222

1 4,325,495
83 4,325,496
153 4,325,497
210 4,325,498
321 4,325,499
4,325,500
4,325,501
504 4,325,502

CLASS 224

148 4,325,503
183 4,325,504
238 4,325,505
243 4,325,506

CLASS 229

55 4,325,507

CLASS 235

380 4,326,123
382 4,326,124
443 4,326,125

CLASS 236

92 B 4,325,508

CLASS 237

51 4,325,509

CLASS 238

341 4,325,510
349 4,325,511

CLASS 239

84 4,325,512
112 4,325,513

CLASS 241

16 4,325,514
57 4,325,515
73 4,325,516

CLASS 242

18.1 4,325,517
47.01 4,325,520
68 4,325,518
75.41 4,325,519
86.2 4,325,521
86.7 4,325,522
205 4,325,523

CLASS 246

34 R 4,325,524

CLASS 248

27.3 4,325,525
73 4,325,526
217.2 4,325,528
298 4,325,529

317 4,325,530
394 4,325,527
553 4,325,531

CLASS 249

26 4,325,532
188 4,325,533

CLASS 250

204 4,326,127
211 J 4,326,126
231 SE 4,326,128
262 4,326,129
506 4,326,130
523 4,326,131

CLASS 251

1 A 4,325,534
58 4,325,535
308 4,325,536

CLASS 252

51.5 A 4,325,827
62 4,325,849
102 4,325,828
109 4,325,829
299.61 4,325,830
354 4,325,831
408 4,325,832
417 4,325,833
429 B 4,325,835
4,325,836
4,325,837
4,325,838
429 R 4,325,834
430 4,325,839
431 C 4,325,841
431 R 4,325,840
443 4,325,842
4,325,843
448 4,325,844
455 R 4,325,846
455 Z 4,325,845
4,325,847
567 4,325,848

CLASS 254

405 4,325,537

CLASS 260

112 B 4,325,866
4,325,867
123.5 4,325,868
146 D 4,325,869
156 4,325,870
160 4,325,871
326.5 FN 4,325,872
338 4,325,873
340.2 4,325,874
346.22 4,325,875
346.74 4,325,876
349 4,325,877
4,325,879
397.1 4,325,878
397.2 4,325,880
397.45 4,325,881
412.4 4,325,882
423 4,325,883
439 R 4,325,884
448 R 4,325,885
455 R 4,325,886
456 P 4,325,887
502 R 4,325,888
509 4,325,889
512 C 4,325,890
544 L 4,325,891

CLASS 261

50 A 4,325,893
66 4,325,894

CLASS 264

23 4,325,895
40.1 4,325,896
40.3 4,325,897
40.5 4,325,898
86 4,325,899
103 4,325,900
146 4,325,901
4,325,902
176 R 4,325,903
242 4,325,904
516 4,325,905

CLASS 266

190 4,325,538
207 4,325,539
243 4,325,540

CLASS 267

8 R 4,325,541
85 4,325,542

CLASS 269

295 4,325,543

CLASS 271

221 4,325,544
4,325,545

CLASS 272

3 4,325,546
144 4,325,547

CLASS 273

55 B 4,325,548
73 R 4,325,549
80 C 4,325,550
110 4,325,551
153 P 4,325,552
167 F 4,325,553
274 4,325,554
355 4,325,555
393 4,325,556

CLASS 277

65 4,325,557
189 4,325,558
235 B 4,325,559

CLASS 280

5 D 4,325,560
33.99 R 4,325,561
62 4,325,562
154.5 R 4,325,563
204 4,325,564
282 4,325,565
668 4,325,566
711 4,325,567
731 4,325,568
804 4,325,569

CLASS 283

7 4,325,570

CLASS 285

177 4,325,571
229 4,325,572

CLASS 290

1 R 4,326,132

CLASS 291

3 4,325,573

CLASS 293

120 4,325,574

CLASS 294

89 4,325,575

CLASS 296

65 R 4,325,576

CLASS 297

45 4,325,577
281 4,325,578

CLASS 299

5 4,325,579
39 4,325,580

CLASS 303

22 R 4,325,581
24 F 4,325,582

CLASS 307

26 4,326,133
268 4,326,134
355 4,326,135
451 4,326,136

CLASS 308

9 4,325,583
4,325,584
4,325,585
10 4,325,586
36.1 4,325,587
59 4,325,588
101 4,325,589
163 4,325,593
184 R 4,325,590
187.2 4,325,591
219 4,325,592

CLASS 310

12 4,326,137
36 4,326,138
42 4,326,139
234 4,326,140
308 4,326,141
320 4,326,142
329 4,326,143

CLASS 312

100 4,325,594
183 4,325,595
194 4,325,596
258 4,325,597

CLASS 313

60 4,326,144
120 4,326,145
318 4,326,146
403 4,326,147

CLASS 315

169.2 4,326,148
289 4,326,149
325 4,326,150
410 4,326,151

CLASS 318

85 4,326,152
327 4,326,153
376 4,326,154
576 4,326,155
809 4,326,156
4,326,157

CLASS 322

4 4,326,158
19 4,326,159

CLASS 323

241 4,326,160
299 4,326,161

CLASS 324

51 4,326,162
58.5 A 4,326,163
71 R 4,326,164
155 4,325,860
158 R 4,326,165
225 4,326,166
415 4,326,167

CLASS 328

162 4,326,168
4,326,169

CLASS 330

10 4,326,170
256 4,326,171
294 4,326,172

CLASS 331

1 A 4,326,173
3 4,326,174

CLASS 333

177 4,326,179
246 4,326,180

CLASS 336

12 4,326,181
198 4,326,182

CLASS 337

70 4,326,183
168 4,326,184
201 4,326,185
407 4,326,186

CLASS 338

21 4,326,187
32 S 4,326,188

CLASS 339

14 L 4,325,598
103 R 4,325,599
116 C 4,325,600

CLASS 340

27 NA 4,326,189
146.3 AE 4,326,190
347 AD 4,326,192
365 R 4,326,193
4,326,194
4,326,195
545 4,326,196
561 4,326,197
572 4,326,198
622 4,326,199
632 4,326,200
717 4,326,201
799 4,326,202
825.79 4,326,191

CLASS 343

700 MS 4,326,203

CLASS 346

75 4,326,204
140 R 4,326,205
4,326,206

CLASS 350

3.71 4,325,601
36 4,325,602
96.14 4,325,603
96.15 4,325,604
4,325,605
96.20 4,325,606
96.21 4,325,607
165 4,325,608
293 4,325,609
343 4,325,610
357 4,325,611
432 4,325,612

CLASS 354

1 4,325,613
23 D 4,325,614

24 4,325,615
27 4,325,616
31 4,325,617
33 4,325,618
121 4,325,619
127 4,325,620
145 4,325,621
170 4,325,622
289 4,325,623
304 4,325,624

CLASS 355

3 DR 4,325,626
3 SC 4,325,625
10 4,325,627
15 4,325,628
27 4,325,629
74 4,325,630
77 4,325,631
86 4,325,632

CLASS 356

141 4,325,633
331 4,325,634
349 4,325,635
350 4,325,636
359 4,325,637
375 4,325,638
376 4,325,639
4,325,640

CLASS 357

16 4,326,208
22 4,326,209
4,326,210
30 4,326,211
46 4,326,212
51 4,326,213
74 4,326,214
81 4,326,215

CLASS 358

8 4,326,216
75 Re.30,911
76 4,326,217
108 4,326,218
163 4,326,219
191.1 4,326,220
210 4,326,221
292 4,326,222

CLASS 360

33 4,326,223
65 4,326,224
74.1 4,326,225
77 4,326,226
99 4,326,227
109 4,326,228
135 4,326,229

CLASS 361

17 4,326,230
119 4,326,231
127 4,326,232
4,326,233
154 4,326,234
156 4,326,235
170 4,326,236
329 4,326,237
386 4,326,238
410 4,326,239

CLASS 362

11 4,326,240
4,326,241
4,326,242
368 4,326,243

CLASS 363

56 4,326,244
79 4,326,245
138 4,326,246

CLASS 364

200 4,326,247
4,326,248
4,326,249
4,326,250
4,326,251
414 4,326,252
435 4,326,253
466 4,326,254
476 4,326,255
484 4,326,256
508 4,326,257
515 4,326,258
715 4,326,259
718 4,326,260
724 4,326,261
851 4,326,262
900 4,326,207
4,326,263
4,326,264
4,326,265
4,326,266

CLASS 365

1 4,326,267
15 4,326,268
189 4,326,269
218 4,326,270

CLASS 366

18 4,325,641
137 4,325,642
200 4,325,643

CLASS 367

16 4,326,271
93 4,326,272
112 4,326,273
118 4,326,274
160 4,326,275

CLASS 368

10 4,326,276
86 4,326,277
157 4,326,278
240 4,326,279
277 4,326,280
294 4,326,281

CLASS 369

48 4,326,282
55 4,326,283
77 4,326,284
137 4,326,285
226 4,326,286

CLASS 370

29 4,326,287
70 4,326,288
85 4,326,289

CLASS 371

21 4,326,290
68 4,326,291

CLASS 372

45 4,326,176
61 4,326,178
92 4,326,177
106 4,326,175

CLASS 373

101 4,326,093

CLASS 376

154 4,325,785
442 4,325,786

CLASS 400

161.4 4,325,644
196.1 4,325,645
4,325,646

CLASS 403

29 4,325,647
218 4,325,648
231 4,325,649
372 4,325,650

CLASS 404

6 4,325,651

CLASS 405

57 4,325,652
68 4,325,653
196 4,325,654
217 4,325,655
4,325,656
259 4,325,657
264 4,325,658
299 4,325,659

CLASS 406

84 4,325,660

CLASS 407

114 Re.30,908

CLASS 408

239 A 4,325,661

CLASS 409

82 4,325,662
136 4,325,663
234 4,325,664

CLASS 411

176 4,325,665

CLASS 414

24.5 4,325,666
139 4,325,667
546 4,325,668
786 4,325,669

CLASS 415

1 4,325,670
43 4,325,671
53 T 4,325,672
113 4,325,673

CLASS 416

19 4,325,674
223 R 4,325,675

CLASS 417

206 4,325,676
218 4,325,677
313 4,325,678
372 4,325,679
379 4,325,681
569 4,325,680

CLASS 418

48 4,325,682
55 4,325,683

CLASS 422

26 4,325,906
54 4,325,907
61 4,325,908
63 4,325,909
64 4,325,910
75 4,325,911
95 4,325,912
100 4,325,913
102 4,325,914
135 4,325,915
197 4,325,916
249 4,325,917

CLASS 423

10 4,325,918
61 4,325,919
82 4,325,920
210 4,325,921
4,325,922
234 4,325,923
235 4,325,924
239 4,325,925
244 4,325,926
310 4,325,927
320 4,325,928
339 4,325,929
345 4,325,930
363 4,325,931
402 4,325,932
415 P 4,325,933
478 4,325,934
483 4,325,935
573 R 4,325,936

CLASS 424

16 4,325,937
18 4,325,938
55 4,325,939
70 4,325,940
84 4,325,941
94 4,325,942
177 4,325,943
4,325,944
4,325,945
180 4,325,946
4,325,947
200 4,325,948
230 4,325,949
238 Re.30,910
245 4,325,950
248.52 4,325,951
250 4,325,952
4,325,953
251 4,325,954
4,325,955
253 4,325,956
263 4,325,957
267 4,325,958
270 4,325,959
4,325,960
273 P 4,325,962
273 R 4,325,961
274 4,325,963
282 4,325,964
284 4,325,965
285 4,325,966
299 4,325,967
300 4,325,968
304 4,325,969
311 4,325,970
320 4,325,973
324 4,325,971
325 4,325,972
343 4,325,974

CLASS 425

62 4,325,684
183 4,325,685
371 4,325,686
387.1 4,325,687
436 R 4,325,688

CLASS 426

66 4,325,975
104 4,325,976
534 4,325,977
4,325,978
570 4,325,979
604 4,325,980

CLASS 427

7 4,325,981
32 4,325,982
38 4,325,984
54.1 4,325,985
74 4,325,986
98 4,325,983
110 4,325,987
160 4,325,988
4,325,989
305 4,325,990
307 4,325,991
4,325,992
315 4,325,993
376.8 4,325,994
428 4,325,995

CLASS 428

16 4,325,996
31 4,325,997
36 4,325,998
112 4,325,999
153 4,326,000
161 4,326,001
178 4,326,002
198 4,326,003
4,326,004
201 4,326,005
204 4,326,006
333 4,326,007
403 4,326,008
407 4,326,009
483 4,326,010
641 4,326,011

CLASS 429

9 4,326,012
20 4,326,013
48 4,326,014
52 4,326,015
184 4,326,016
228 4,326,017

CLASS 430

15 4,326,018
108 4,326,019
302 4,326,020
427 4,326,021
546 4,326,022
550 4,326,023
557 4,326,024

CLASS 431

70 4,325,689
78 4,325,690
190 4,325,691
254 4,325,692

CLASS 432

195 4,325,693
247 4,325,694

CLASS 433

91 4,325,695
133 4,325,696

CLASS 434

258 4,325,697
278 4,325,698

CLASS 435

2 4,326,025
4,326,026
7 4,326,027
32 4,326,028
109 4,326,029
144 4,326,030
146 4,326,031
148 4,326,032
161 4,326,036
212 4,326,033
241 4,326,034
247 4,326,035
274 4,326,037

CLASS 440

47 4,325,699
61 4,325,700
113 4,325,701

CLASS 441

74 4,325,154

CLASS 455

27 4,326,292
72 4,326,293
139 4,326,294
188 4,326,295
192 4,326,296
213 4,326,297
606 4,326,298

CLASS 474

56 4,325,702
130 4,325,703

CLASS 501

41 4,326,038
90 4,326,039
100 4,326,040

CLASS 518

702 4,326,041

CLASS 521

115 4,326,042
137 4,326,043
147 4,326,044

CLASS 523

201 4,325,856
205 4,325,861
4,325,865
334 4,325,852
412 4,325,857

CLASS 524

83 4,325,851
87 4,325,862
96 4,325,859
104 4,325,864
219 4,325,855
228 4,325,850
272 4,325,853
476 4,325,854
524 4,325,858

CLASS 525

206 4,326,045
276 4,326,046
507 4,326,047

CLASS 526

68 4,326,048
91 4,326,049

CLASS 528

94 4,326,050
386 4,326,051

CLASS 536

1 4,326,052
4,326,053
17 R 4,326,054

CLASS 542

429 4,326,055

CLASS 544

182 4,326,056
221 4,326,057
243 4,326,058
4,326,059
258 4,326,060

CLASS 546

164 4,326,061
166 4,326,062
191 4,326,063
322 4,326,064

CLASS 548

143 4,326,065
256 4,326,066
347 4,326,067

CLASS 549

89 4,326,068

CLASS 560

169 4,326,069
190 4,326,070

CLASS 562

574 4,326,071
587 4,326,072
609 4,326,073

CLASS 564

47 4,326,074
48 4,326,075
156 4,326,076
211 4,326,077
312 4,326,078
393 4,326,079
402 4,326,080
416 4,326,081
497 4,326,082

CLASS 568

322 4,326,083
360 4,326,084
366 4,326,085
388 4,326,086
631 4,326,087
638 4,326,088
639 4,326,089

CLASS 585

469 4,326,090
828 4,326,091
4,326,092

CLASS 624

111 4,325,863

CLASSIFICATION OF DESIGNS

D2—	208	263,890
	395	263,891
		263,892
		263,893
D3—	21	263,894
	29	263,895
	30.1	263,896
	39	263,897
	56	263,898
	73	263,899
D6—	5	263,900
	23	263,901
	68	263,902
	112	263,903
	113	263,904
	114	263,905
	130	263,906
		263,907
	146	263,908
	177	263,909
		263,910
	181	263,911
		263,912
	186	263,913
	191	263,914
D7—	5	263,915
	9	263,916
	106	263,917
	107	263,918
	130	263,919
	132	263,920
	137	263,921
	207	263,924
D8—	14	263,925
	327	263,926
	399	263,927
		263,928
D9—	370	263,929
	373	263,930
	406	263,931
	434	263,932
	447	263,933
D10—	2	263,934
	38	263,935
D11—	7	263,936
		263,937
	118	263,938
	143	263,939
D12—	14	263,940
	36	263,942
	92	263,943
	112	263,944
	115	263,945
	146	263,946
	156	263,947
	189	263,948
	315	263,949
D13—	12	263,950
	24	263,951
	99	263,952
D14—	5	263,953
	03	263,956
	36	263,954
	73	263,955
	107	263,957
D15—	7	263,958
	104	263,960
D16—	6	263,961
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	34	263,963
D17—	18	263,965
D18—	2	263,966
	7	263,967
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		263,969
	34	263,970
D19—	91	263,971
D20—	10	263,964
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D21—	13	263,973
	16	263,974
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	195	263,978
	199	263,979
	219	263,980
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	237	263,982
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	253	263,984
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	45	263,999
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	80	264,001
		264,003
	87	264,002
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	74	264,007
	113	264,008
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D29—	5	264,010
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D34—	24	263,941
	43	264,014
D99—	28	264,012
	32	264,013

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01 :	4,325,225	4,325,665	4,326,292	4,325,599	4,325,760	4,325,187
	4,325,252	4,325,667	08 : 4,325,254	4,325,612	4,325,780	4,325,203
	4,325,270	4,325,668	4,325,544	4,325,765	4,325,804	4,325,235
	4,326,059	4,325,669	4,325,732	4,325,787	4,325,806	4,325,305
02 :	4,325,564	4,325,707	4,325,802	4,325,799	4,325,807	4,325,309
04 :	4,325,360	4,325,737	4,325,844	4,325,849	4,325,808	4,325,635
	4,325,657	4,325,754	4,325,919	4,325,909	4,325,811	4,325,744
	4,326,135	4,325,796	4,325,925	4,325,918	4,325,816	25 : 4,325,247
	4,326,171	4,325,798	4,325,996	4,326,119	4,325,882	4,325,291
	4,326,247	4,325,800	4,326,226	4,326,162	4,325,977	4,325,405
	4,326,249	4,325,801	09 : 4,325,160	4,326,168	4,325,978	4,325,483
05 :	4,325,596	4,325,805	4,325,220	4,326,170	4,326,013	4,325,546
06 :	Re.30,909	4,325,823	4,325,327	4,326,186	4,326,033	4,325,547
	4,325,149	4,325,830	4,325,357	4,326,222	4,326,048	4,325,607
	4,325,150	4,325,832	4,325,387	4,326,245	4,326,083	4,325,614
	4,325,153	4,325,833	4,325,391	4,326,258	4,326,092	4,325,616
	4,325,162	4,325,845	4,325,440	13 : 4,325,165	4,326,096	4,325,624
	4,325,163	4,325,847	4,325,449	4,325,244	4,326,103	4,325,681
	4,325,199	4,325,859	4,325,590	4,325,321	4,326,107	4,325,686
	4,325,204	4,325,881	4,325,640	4,326,161	4,326,153	4,325,706
	4,325,237	4,325,911	4,325,746	4,326,181	4,326,260	4,325,865
	4,325,240	4,325,912	4,325,756	4,326,184	4,326,273	4,325,972
	4,325,246	4,325,924	4,325,777	4,326,218	18 : 4,325,219	4,326,014
	4,325,257	4,325,926	4,325,785	15 : 4,325,950	4,325,234	4,326,057
	4,325,295	4,325,929	4,325,786	16 : 4,325,279	4,325,280	4,326,149
	4,325,302	4,325,936	4,325,861	4,325,308	4,325,281	4,326,175
	4,325,323	4,325,975	4,325,913	4,325,505	4,325,331	4,326,191
	4,325,340	4,325,984	4,325,982	4,325,536	4,325,556	4,326,237
	4,325,359	4,325,991	4,325,990	4,325,937	4,325,561	4,326,241
	4,325,361	4,325,992	4,326,011	17 : 4,325,189	4,325,567	4,326,275
	4,325,367	4,325,999	4,326,180	4,325,209	4,325,588	4,326,283
	4,325,373	4,326,008	4,326,192	4,325,217	4,325,673	26 : 4,325,156
	4,325,376	4,326,015	10 : 4,325,740	4,325,238	4,325,689	4,325,227
	4,325,394	4,326,026	4,325,792	4,325,290	4,325,690	4,325,275
	4,325,433	4,326,052	4,325,857	4,325,319	4,325,758	4,325,283
	4,325,438	4,326,053	4,325,986	4,325,417	4,325,959	4,325,300
	4,325,439	4,326,077	4,325,989	4,325,432	4,326,284	4,325,339
	4,325,445	4,326,082	4,326,007	4,325,487	19 : 4,326,183	4,325,352
	4,325,450	4,326,102	4,326,072	4,325,490	20 : 4,325,216	4,325,355
	4,325,456	4,326,114	4,326,084	4,325,494	4,325,463	4,325,443
	4,325,513	4,326,115	11 : 4,325,379	4,325,497	4,325,509	4,325,468
	4,325,550	4,326,132	4,326,012	4,325,504	21 : 4,325,178	4,325,471
	4,325,553	4,326,134	12 : 4,325,177	4,325,508	4,325,470	4,325,525
	4,325,570	4,326,203	4,325,179	4,325,512	4,325,644	4,325,531
	4,325,571	4,326,214	4,325,223	4,325,518	4,325,714	4,325,542
	4,325,575	4,326,216	4,325,381	4,325,522	4,325,718	4,325,565
	4,325,603	4,326,219	4,325,389	4,325,530	4,326,070	4,325,701
	4,325,611	4,326,244	4,325,390	4,325,551	22 : 4,325,535	4,325,749
	4,325,627	4,326,250	4,325,393	4,325,559	4,325,815	4,325,757
	4,325,633	4,326,251	4,325,425	4,325,643	4,325,927	4,325,875
	4,325,651	4,326,266	4,325,481	4,325,720	23 : 4,325,345	4,325,904
	4,325,654	4,326,270	4,325,485	4,325,742	4,325,543	4,325,985
	4,325,656	4,326,290	4,325,548	4,325,745	24 : 4,325,152	

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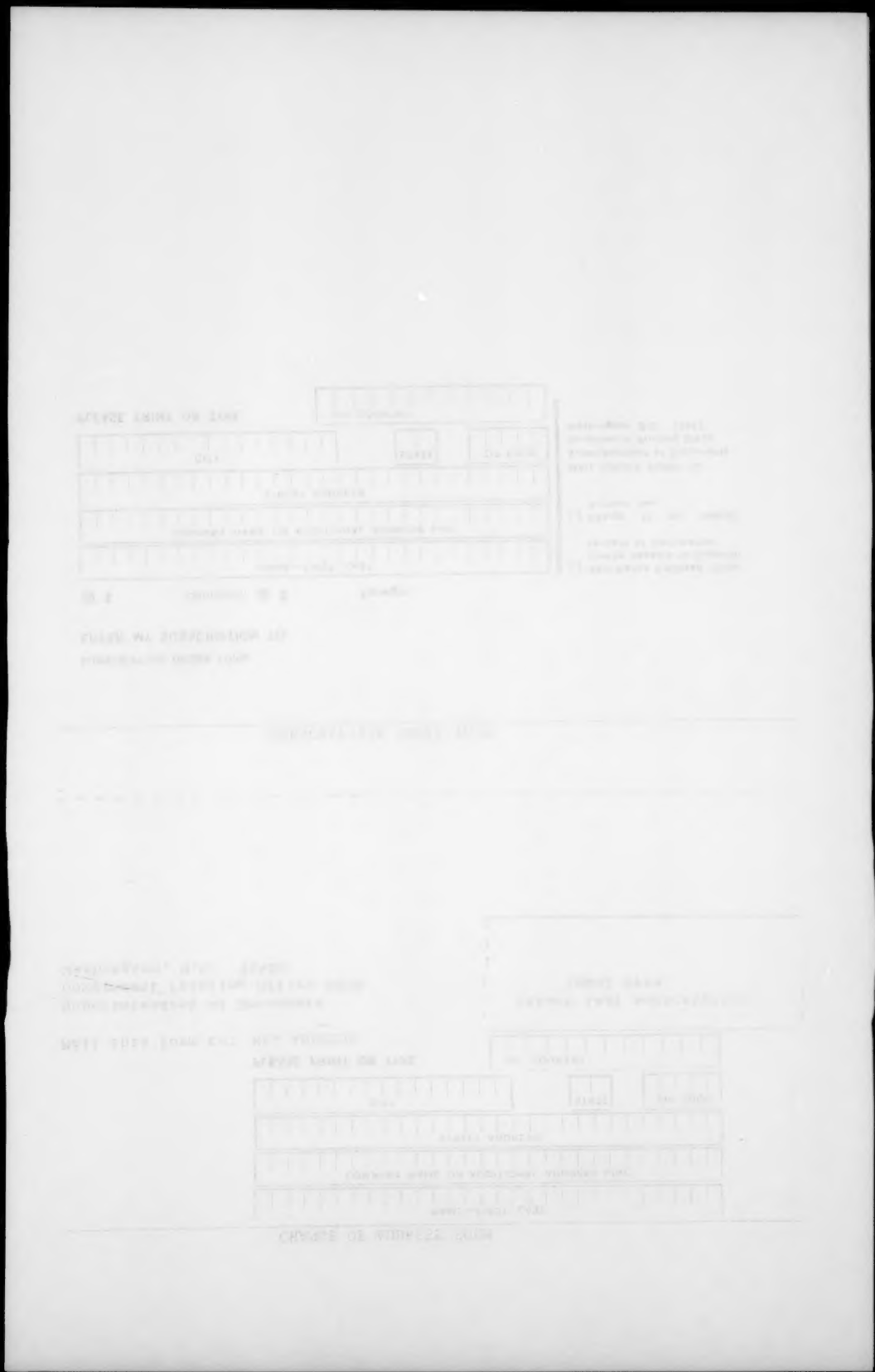

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